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AUTHOR	Colvin, Dan
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ABSTRACT

A complete mathematics testing program, involving diagnosis, prescription, and implementation, was developed by the Committee of Low-Achievers in Mathematics, Denver Area (COLAMDA), for use with low achievers in grades 7-12. A complete set of performance objectives serves as the course outline. Seventy-nine pretests and post-tests, covering whole numbers, decimals, fractions and percentages, determines student mastery of the objectives. (These tests and accompanying keys form a major part of this document). A computer is used to rapidly identify student deficiencies. The mathematics laboratory is the vehicle which introduces COLAMDA's innovative teaching strategies. Individualized instruction is accomplished through various fluid grouping techniques. Positive change in student and teacher attitude, as well as mathematical progress, is an integral part of evaluation of COLAMDA. For related information, see TM 003 415. (NE)

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IMPROVED LEARNING PRACTICES THROUGH DIAGNOSIS OF INDIVIDUAL PUPIL NEEDS, PRESCRIPTION AND IMPLEMENTATION FOR FULFILLING THOSE NEEDS

(COLAMDA PROJECT)

By Dan Colvin

Editorial Assistance
by
L. G. Campbell

Regional Center for Pre-College Mathematics

Director: Dr. Ruth I. Hoffman

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-All the teachers involved in the COLAMDA project

COLAMDA materials were developed, field tested, revised, and finally used by hundreds of teachers in Colorado and in many other parts of the country. The final form consists of two parts: Teacher Idea Cards ($5.88) and Student Activity Packets ($21.22) (master forms) which are available through Northern Colorado Board of Cooperative Services, 830 South Lincoln, Longmont, Colorado 80501.

DEFINITIONS

Low Achiever: In this paper "low achiever" identifies students, grade 7-12, enrolled in remedial, "modified" or "basic" classes. Participants of low achiever classes are identified by:

1. Marked deficiencies in problem solving and computation skills as measured by standardized achievement or equivalent testing.

2. History of unsuccessful experiences in previous mathematics classes.

COLAMDA: (Committee of Low-Achievers in Mathematics — Denver Area) was a curriculum development and teacher training project funded under the provision of Title III, ESEA. This cooperative project, incorporating thirteen Denver Metro area school districts, was created because representatives from local districts, the University of Denver and the Colorado Department of Education identified a need for the development of an effective program model for low achievers in mathematics, grades seven through twelve.

Personalized Instruction: Personalized Instruction is the utilization of teaching procedures geared to the individual characteristics of both pupil and teacher.

INTRODUCTION

This Guide presents a complete testing program—diagnosis, prescription and implementation for a mathematics program for low achievers. The testing program uses the input of tests and ideas from teachers, administrators, and directors of the COLAMDA project, MAGIC project, and other projects. Much of the work done by the COLAMDA project and the MAGIC project will be used.

The testing program is developed in five areas: 1. introduction, 2. diagnosis, 3. prescription and implementation, 4. use of computer for testing program, 5. appendix (pre and post tests, answer sheet, answer key, and item analysis).

WHAT IS COLAMDA?

COLAMDA (Committee On Low Achievers in Mathematics-Denver Area) is a curriculum development and teacher training project funded under the provisions of Title III, ESEA. This cooperative project, incorporating thirteen Denver Metro area school districts, was created because representatives from local districts, the University of Denver, and the Colorado Department of Education identified a need for the development of an effective program model for low achievers in mathematics, grades seven through twelve.

In developing and arranging materials, seven categories were designated:

A. Software—printed, drill type material.
B. Hardware—material adaptable for use with adders, calculators, computers, etc.
C. Manipulative and concrete material—drill activities.
D. Simulation activities—activities based on real-life situations.
E. Mathematical games—game and puzzle type activities designed to reinforce mathematical skills.

F. Physical involvement activities—lab experiments, etc.

G. Miscellaneous—teacher oriented material, techniques, suggestions, ideas, etc.

Activities were intended to be oriented toward the interest of students and "open-ended" in structure to provide for individual differences in skill development, interest, and age level.

Each activity was described on a 5 x 8 teacher's card telling purpose, procedure, materials, and other information: extension, cross-reference, etc. The teacher cards were letter and color coded (category) and number coded (order); the accompanying student sheets were also coded by letter and number. The set of student sheets, printed black on white, lent themselves to the making of ditto copies for the use of students in the classroom.

In 1968-69 the project teachers used various standardized tests (Stanford, CAT, ITBS, TAP, ITED) to measure student academic growth. During the last two years of project operation, the measurement was standardized by use in all schools of the Stanford Achievement Test, Advanced Battery. The following data are based on average grade placement scores of project students.

	Pre Tests	Post Tests	Gains	Time Between Tests
1968-69	6.44	7.12	.68	6 months
1969-70	6.16	6.97	.81	6 months
1970-71	5.87	6.68	.81	6 months

According to teachers who have worked with low achieving students in the past, any positive growth meant a successful year for both the

student and teacher. Based on statements such as this one, the academic gains of the COLAMDA students are excellent.

During the first year (1968-69) the COLAMDA project administered student questionnaires to measure student attitude before and after the use of COLAMDA materials. Results of the questionnaires (see Appendix) indicated that student attitudes had changed in the positive direction on each item. The most favorable changes occurred on the following

1. I enjoy mathematics classes.
2. I enjoy working with the calculators.
3. I have enjoyed this mathematics class more than previous mathematics classes.
4. I feel more success in this mathematics class than in previous mathematics classes.
5. I feel I have learned more in this class than in previous mathematics classes.
6. I feel appropriate materials were used in this class.
7. I like the variety of activities used in this mathematics class.
8. I feel that the teacher understands me and my mathematical needs.
9. I enjoy working with the games and puzzles.

During the second year of project operation, a student semantic differential replaced the student questionnaire. This instrument measured student attitudes towards the following: arithmetic, school, teacher aide, reading, my teacher, homework, laboratory, myself. It was clearly evident that student attitudes had changed significantly in the positive direction in all areas.

In the third and final year of the COLAMDA project, a student semantic differential was also given measuring student attitudes towards the following: arithmetic, my school, teacher aide, homework, mathematics laboratory, my mathematics teacher. The project results indicate little attitude change.

Both written and oral responses have indicated that students involved in the project did experience success and satisfaction with mathematics and other facets of school life.

During the last two years of the project (1969-70, 1970-71), the teachers were administered a semantic differential questionnaire before and after the use of COLAMDA ideas and materials. Teacher attitudes were measured in the following areas: mathematics, slow learners, mathematics laboratory, teacher aide, myself, COLAMDA, my principal, personalized instruction. It is interesting to note that the COLAMDA teachers scored high in each area in the pre and post tests. This suggests that highly qualified and interested teachers were selected to guide the low achiever from the outset of the school year. The evidence from this instrument indicates that participating COLAMDA teachers were some of the best teachers in their school districts.

COLAMDA MATHEMATICS PERFORMANCE OBJECTIVES

Working with low achieving students requires a special desire on the part of the teacher. COLAMDA has developed a complete set of performance objectives which serves as the course outline for a mathematics program for low-achievers. The program is designed to

involve mathematical skills that students would use in everyday life: whole numbers, fractions, decimals, and percents. Following is a list of all objectives needed to successfully teach the low ability student.

Assumptions:

Common measuring instruments include English and metric rulers, measuring cups, protractor, scale.

Fraction implies proper, improper and mixed numbers.

Reasonable denominators are halves, thirds, fourths, sixths, eighths, tenths, and sixteenths.

A decimal fraction is a number less than one which is written as a decimal.

Integral percent implies a whole number placed in front of a percent sign.

Fractional percent implies a fraction or decimal number placed in front of a percent sign.

Diversion refers to mathematical games and puzzles not tied to a specific objective.

Enrichment refers to materials which explore the objectives in more depth or extend beyond the given objectives.

Combinations refer to those activities which use a combination of preceding skills.

* indicates activities that are more high school oriented.

THE MATHEMATICS PERFORMANCE OBJECTIVES ARE INTENDED TO BE USED AS AN AID IN ADJUSTING STUDENT - INTEREST ACTIVITIES TO PUPIL INDIVIDUAL DIFFERENCES. THEY ARE NOT INTENDED TO BE USED TO DETERMINE THE SEQUENCE OF COURSE CONTENT.

WHOLE NUMBER OBJECTIVES

LEVEL I	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES AND RECREATION	RELATED TO AUTOS CYCLES, ETC., TRANSPORTATION	RELATED TO OCCUPATION	TXTBK. AND COMM. MAT.
1. Naming whole numbers: a. 0 through 99 b. 100 through the thousands without intermediate zeros.	A-1 #1-6 A-1 #8-10 A-34 #1 A-12		C-7 C-21 C-30 C-38 C-50 C-51					*I-9 ( )	*J-2 ( )		
2. Demonstrating using common measuring instruments to the nearest whole number.			C-29 C-2		E-53						
3. Demonstrating the addition of whole numbers through a four by four array.			C-7 C-35 #3	D-8 #1				I-7 #1-3 ( )	*J-3 ( )	See D-8 #1	
4. Demonstrating the subtraction of whole numbers through the thousands including borrowing from one place.			C-8 C-35 #6								
Addition and subtraction combinations.	A-13 #1 *A-15 #1 A-21 #1-5 A-17 #2		C-18		E-33		See *A-15 #1			K-11 ( )	
5. Demonstrating the multiplication facts for 0 through 10 without reference to a table.			C-9			F-5					
6. Demonstrating multiplying by a two digit number.	A-7 #1		C-35 #4								
7. Demonstrating the use of division facts for 1 through 9 without reference to a table.											

LEVEL I (continued)	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATED ACTIVITIES	TEXT-BOOK	PERSONAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES AND RECREATION	RELATED TO AUTOS, CYCLES, ETC., TRANSPORTATION	RELATED TO OCCUPATION	INTER. AND COMM. MAT.
8. Demonstrating dividing any number through thousands by a one digit number.	A-24 #1-2		C-24 C-35 #5								
Multiplication and division combinations.			C-11 #1-2								
9. Ordering the numbers through the thousands.											
10. Interpreting by estimating answers using any of the basic operations.						F-4					
Combination all operations	A-16 #1,#3	B-1 #1,#3 B-2 #1,#2	C-14 #1 C-20 C-34	*D-2 *D-3 *D-4 *D-5 D-14 D-23	E-1 E-2 E-10 E-32 E-52 E-59 E-38	F-8 *F-13 #1-2 F-14				K-6 ( ) See D-14	
LEVEL II											
1. Naming whole number symbols through the hundred thousands.			C-43		E-34	F-23					
2. Ordering numbers through the hundred thousands.			C-43								
3. Applying the rule for rounding off to any place value up to and including the hundred thousands.			C-38								
4. Demonstrating addition of whole numbers.				*D-13 #2					See *D-13		
5. Demonstrating subtraction of whole numbers including borrowing from two places through hundred thousand.											

LEVEL II (continued)	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES AND RECREATION	RELATED TO AUTOS, CYCLES, ETC., TRANSPORTATION	RELATED TO OCCUPATIONS	TXTBK. AND COMM. MAT.
Addition and subtraction composite.	A-13 #2										
6. Demonstrating dividing a number through the thousands by a two digit number with one significant digit.											
Multiplication and division combinations.								*I-13 ( )			
Composite all operations.	A-2 #1-2	B-16	C-29				See B-16			*K-8 #6,7 #8 ( )	
LEVEL III											
1. Naming whole number symbols through the hundred millions.						F-30					
2. Demonstrating writing the words for numbers 0 through 100.			C-42								
3. Ordering the numbers through the hundred millions.											
4. Applying the rule for rounding off any whole number to any place value through a hundred million.					E-49, #1-2						
5. Demonstrating subtraction.											
Addition and subtraction combinations.											

LEVEL III (continued)	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES AND RECREATION	RELATED TO AUTOS, CYCLES, ETC. TRANSPORTATION	RELATED TO OCCUPATIONS	TXTBK. AND COMM. MAT.
6. Demonstrating dividing any number through the hundred thousands by a three digit number containing one significant digit.	A-24, #1-2 A-19 #1, #2										
7. Demonstrating dividing any number through the ten thousands by a two digit number.											
Multiplication and division combinations.										J-4 #1 ( )	
Combination all operations.	A-35 #1										
LEVEL IV											
1. Naming whole number symbols to hundred billions.											
2. Demonstrating writing the words for any whole number through a thousand.											
3. Demonstrating changing expression to its factored equivalent and its whole number equivalent.											
4. Demonstrating multiplication of whole numbers.					*E-11					See *E-11	
5. Demonstrating dividing any number by a three digit number.											
Combinations.					E-46 E-57 E-58						

FRACTIONAL NUMBER OBJECTIVES

NOTE: SEE ACTIVITY A-8 FOR FRACTION UNIT DEVELOPMENT

LEVEL I	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES AND RECREATION	RELATED TO AUTOS, CYCLES, ETC., TRANSPORTATION	RELATED TO OCCUPATIONS	TXTBK. AND COMM. MAT.
1. Distinguishing and naming halves, thirds, and fourths of a unit, an object, and a set.	A-1 #13-18 A-9 #1-12	B-4	C-12 C-6 C-5 C-49								
2. Ordering fractional numbers in halves, thirds, and fourths using visual aids	A-9 #1-12 A-16 #1		C-10 C-12								
3. Demonstrating the use of common measuring instruments to halves, thirds, and fourths.			C-29					I-3 #1			
4. Demonstrating the addition of fractional numbers with LIKE denominators in halves, thirds, and fourths.	A-8 #5										
5. Demonstrating the subtraction of fractional numbers with LIKE denominators in halves, thirds, and fourths.											
Addition and subtraction combinations in halves, thirds, and fourths. SAME denominators.											
6. Distinguishing and naming equivalent fractions like 2/4, 1/2, 1/4, 4/3, and 1 1/3.		B-4	C-12 C-15 #1 C-35 #8 C-37 C-39								

LEVEL II	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES AND RECREATION	RELATED TO AUTOS, CYCLES, ETC., TRANSPORTATION	RELATED TO OCCUPATIONS	TXTBK. AND COMM. MAT.
1. Distinguishing and naming fractional parts of any reasonable denomination of a unit, an object, and a set.	A-8 #6-14 A-29 #1, #2 A-8 #33	B-4	C-12 C-13 C-39 #1 3 C-5								
2. Ordering fractional numbers with reasonable denominators using visual aids and the symbols <, >, =.	A-27 A-33		C-10 C-12 C-35 #9	D-6						See D-6	K-12
3. Demonstrates the use of common measuring instruments with reasonable denomination.	A-10 A-8 #25-26 A-29 #1, #2		C-15 #1 C-28 C-14 #4	D-6 D-13 #3 *D-7	E-54					See D-6 See D-13 #3	
4. Demonstrates the addition of fractional numbers with SAME reasonable denominators.	A-8 #1-3										
5. Demonstrating the subtraction of fractional numbers with the SAME reasonable denominators.											
Composite of addition and subtraction with the SAME reasonable denominators.		B-13	C-34 C-49								

LEVEL III											
1 Naming, distinguishing and demonstrating the rule of equivalent fractions.	A-8 #15-16		C-10 C-15 #1 C-16 C-37		E-8 E-42						
2. Demonstrating subtraction of fractional numbers with SAME denominators involving borrowing.	A-8 #29-31										
Addition and subtraction combinations.											

LEVEL III (continued)	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES AND RECREATION	RELATED TO AUTOS, CYCLES, ETC., TRANSPORTATION	RELATED TO OCCUPATIONS	TXTBK. AND COMM. MAT.
3. Demonstrating addition and subtraction of fractional numbers with different reasonable denominators excluding borrowing.	A-8 #4,19, 20, 21 22, 32 A-17 #1 A-13 #3 A-29 #1-2	B-13	C-15 #2,4 C-16 C-18 C-37 C-39 #4-8			F-27 #1,#2		I-12 #1			
4. Demonstrating multiplication of fractional numbers excluding products of two mixed numbers.	A-8 #17,18, 23,24, 27,28, 34		C-15 #5 C-39 #9-10	D-9 D-13 #3 D-23		F-40		I-11 #1 I-10 #1	See D-13 #3		
Composite - Addition, subtraction and multiplication.	A-3 #1-2 A-16 #2		C-14 #2,4								
Combination Fractions	A-7 #3 A-18 #1-4		C-11 #3-4 C-29								
LEVEL IV											
1. Demonstrating the use of the four basic operations with fractional numbers.			C-33		E-3 E-6 E-7						
Division			C-15 #3								
2. Ordering fractional numbers using <, >, = without visual aids.								*I-6			

DECIMAL NUMBER OBJECTIVES

NOTE: SEE ACTIVITY A-3* FOR BASIC DECIMAL UNIT DEVELOPMENT.

LEVEL I	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES AND RECREATION	RELATED TO AUTOS, CYCLES, ETC., TRANSPORTATION	RELATED TO OCCUPATIONS	TXTBK. AND COMM. MAT.
UP TO AND INCLUDING HUNDREDTHS.											
1. Naming decimal number symbols.	A-36 #1										
2. Demonstrating the use of the metric ruler to the nearest tenth of a centimeter.	A-30 #1		C-31 C-32 C-48	D-6	E 54				See D-6		
3. Ordering decimal numbers.								*I-5 *I-16			
4. Applying the rule for rounding off to nearest tenth and to the nearest hundredth.	A-25 #1, #2		C-38								
5. Demonstrating adding and subtracting.	*A-26 #1	B-7 B-13 B-16	C-31 C-32	D-1				*I-8 *I-2 *I-4		K-15 K-17 *K-1	
6. Demonstrating multiplying by a two digit decimal number.			C-48	D-21				*I-1 I-15		*K-4 #2 K-2 K-10	
7. Demonstrating dividing a decimal number by a single digit whole number.										*K-9 #1,2	
Composite - Multiplication and division.	A-7 #2,#4	B-13	C-49								
8. Demons rating converting fractions with denominators of halves, fourths, tenths, and hundredths to their decimal equivalents.	A-23 #1 A-31 #1		C-41								
9. Demonstrating converting decimal fractions of tenths and hundredths to their fractional equivalents.	A-32 #1		C-41								

LEVEL I (continued)	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO HOBBIES, SPORTS AND RECREATION	RELATED TO AUTOS, CYCLES, ETC., TRANSPORTATION	RELATED TO OCCUPATIONS	TXTBK. AND COMM. MAT.
Composites - All.	*A-20 #1-3	*B-10 #1-2 B-5 #1, #2 B-7	C-14 #3	D-10 D-17 D-13 #4-#7	E-39 E-45	F-16		I-14 See E-39	*J-1 #1,2 *J-5 #1-3 See D-13 #4-7	K-7 *K-8 #6-8	See D-10, See F-16
LEVEL II											
All decimal numbers in Level II are done through the thousandths.											
1. Naming decimal number symbols.	A-10 #1					F-9			See F-9		
2. Ordering decimal numbers.	A-1#7,#11 A-28 #1,2				E-56						
3. Applying the rule for rounding off to the nearest thousandth.	A-22 #1		C-38		E-50						
4. Demonstrating adding and subtracting.	A-13 #4	B-8			E-55						
5. Demonstrating multiplication.										*K-4 #3	
6. Demonstrating dividing a decimal number by a single digit decimal fraction.			C-52			F-21					
Multiplication and division combinations.											
7. Demonstrating converting a fraction to a decimal number, rounding off the answer to the nearest thousandth.		B-8	C-17 C-22								
Composite - All operations.			C-17 C-22			*F-18 *F-19			See *F-18		

LEVEL III	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES, AND RECREATION	RELATED TO AUTO CYCLES, ETC., TRANSPORTATION	RELATED TO OCCUPATIONS	TXTBK. AND COMM. MAT.
1. Demonstrating dividing a decimal number by a two digit decimal fraction.			C-48 #2 C-52								
Combination - Multiplication and division.			C-11 #5,6,7								
2. Demonstrating converting any fraction with denominator less than 100 to its equivalent decimal number, rounding it off to the nearest thousandth.		B-8	C-17						-		
LEVEL IV											
1. Naming any decimal number symbol.											
2. Demonstrating dividing a decimal number by a three digit decimal fraction.	*A-11		C-52						See *A-11		
3. Naming any whole number in scientific notation.			C-5 C-45	D-12							
Operations with decimals.	A-16 #4	B-6				*F-25					
Composite - Operations including all numbers except %.		*B-11 *B-12 *B-9 B-15		*D-15 *D-19 D-16 D-11	*E-44	F-6 F-7 F-10 F-12 F-14 F-20 F-22				See *D-15 See *D-19 See *B-11,12 See B-15	

PERCENT NUMBER OBJECTIVES

LEVEL I	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES AND RECREATION	RELATED TO AUTOS, CYCLES, ETC., TRANSPORTATION	RELATED TO OCCUPATIONS	TXTBK. AND COMM. MAT.
1. Distinguish and name integral and fractional percents.											
2. Demonstrating equivalent percents with halves, fourths, tenths, and hundredths.			C-34 C-47								
3. Name and demonstrate integral percents as a fraction.			C-47								
Composite											

LEVEL II											
1. Demonstrate equivalence of a number less than one to a fraction, decimal and percent.			C-47		E-4 E-5						
2. Interpreting and demonstrating a percent of a value.			C-19 C-25 C-44		*E-41					K-14 *K-13.	
Composite	*A-14 #1			D-2 *D-18						*K-8 #6-8	

LEVEL III											
1. Interpreting and demonstrating the percent one value is of another.			C-25 C-44			F-28					
2. Demonstrate equivalence of values greater than one for fractions, decimals, and percents.											
Composite											

LEVEL IV	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES AND RECREATION	RELATED TO AUTOS, CYCLES, ETC., TRANSPORTATION	RELATED TO OCCUPATIONS	TXTBK. AND COMM. MAT.
1. Demonstrate equivalence of fractional percents to fractions or decimals.											
Composite	A-4, #1,2	B-14 B-17	C-11 #8	D-17 *D-20						See B-14	
Enrichment.			C-26 C-27 C-36 C-40 C-45 C-46			F-1 F-2 #1,#2 F-3 #1 F-17 F-26 F-11 F-15 F-24 F-29 F-28			See F-1	*K-8 #1-5	
Diversion.	A-5 A-6	B-3	C-1 C-3 C-4 C-23		E-9 E-12 E-13 E-14 E-15 E-16 E-17 E-18 E-19 E-20 E-21 E-23 E-24 E-25 E-26 E-27 E-28 E-29 E-30 E-31 E-35 E-36 E-37 E-40 E-43 E-47 E-48 E-51					*K-8 #6-8 *K-3 #1,2	

GEOMETRY OBJECTIVES

LEVEL I	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES, AND RECREATION	RELATED TO AUTOS, CYCLES, ETC., AND TRANSPORTATION	RELATED TO OCCUPATIONS
Demonstrating the use of common measuring instruments and metric ruler to the nearest whole numbers			C-2			F-22				
Demonstrating the use of the compass and straight edge	A-1 #1-18 A-10 A-34									
Demonstrating construction and recognition of angles, triangles, rectangles, and squares	A-6		C-1 A-F C-3 C-4 C-14 C-40 #1,2		E-22 E-36 E-53	F-17 G-2 G-7				
Demonstrating finding the perimeter of triangles, rectangles, and squares with whole numbers for sides			C-1 A-F C-14 C-20			G-2	*H-30			
Demonstrating knowledge of basic linear conversion factors: inches to feet, etc.			C-14							
LEVEL II										
Demonstrating the use of common measuring instruments to halves, thirds, and fourths			C-28 C-31		E-54					
Demonstrating finding the perimeter of triangles, squares and rectangles with reasonable fractions for sides			C-14 C-29 C-33 C-40 #3							

GEOMETRY OBJECTIVES

LEVEL II (cont'd)	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES AND RECREATION	RELATED TO AUTOS, CYCLES, ETC., AND TRANSPORTATION	RELATED TO OCCUPATIONS
Demonstrating finding the area of triangles, squares, and rectangles with whole numbers for sides		B-1 #1,2	C-1 A-F C-3 C-36 C-4 C-40, C-14 #3 C-20 C-33			F-5 G-2				
Demonstrating reading graphs: bar, circle, picture, line, coordinate	A-9, #1-15									
Demonstrating knowledge of dry and liquid conversion factors: pints to quarts, ounces to pounds, etc.			C-11							
Demonstrating knowledge of area conversion factors: square inches to square feet, square feet to square yards, etc.										
Demonstrating recognition of cubes, cylinders, pyramids, cones					E-14					
LEVEL III										
Demonstrating the use of common measuring instruments with reasonable fractional denominators	A-8 #25, 26 A-10 A-29 #1, 2		C-15 #1							
Demonstrating finding the areas of triangles, squares, and rectangles with reasonable fractions for sides			C-1 A-F C-3 C-4 C-14 C-40 #3							
Demonstrating finding the circumference of a circle						F-1				

GEOMETRY OBJECTIVES

LEVEL III (cont'd)	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	SIMULATION ACTIVITIES	MATH GAMES	PHYSICAL INVOLVEMENT ACTIVITIES	CONSUMER AND BUSINESS	RELATED TO SPORTS, HOBBIES AND RECREATION	RELATED TO AUTOS, CYCLES, ETC., AND TRANSPORTATION	RELATED TO OCCUPATIONS
Demonstrating construction of graphs: bar, line, circle, coordinate	A-1 #1-18 A-34					F-2				
LEVEL IV										
Demonstrating computing the area of a circle			C-26			F-26				
Demonstrating computing the volume of rectangular solids						F-24				
Demonstrating using scale drawings		B-10 B-11 B-12 *B-14								
Demonstrating combinations of areas		B-1 #1,2 B-2 #1,2				F-5				
ENRICHMENT										
Demonstrating finding the areas of irregular-shaped plane figures						F-5				
Demonstrating finding the volumes of prisms, cylinders, and pyramids	A-7					F-7				See A-7

THE MATHEMATICS LABORATORY

New and innovative teaching strategies were used by the COLAMDA teachers to achieve the objective of the program. The math lab is the vehicle used to introduce different teaching strategies.

"Individualized instruction" often means grouping together students with similar deficiencies. The following techniques of grouping were developed by Dr. Ruth Hoffman.

HOW DO YOU LEARN?

This is a brief exercise in learning. It will aid the student to see his part in the learning-teaching situation. (The teacher may also benefit.)

MATERIALS: Overhead projector; 10 toothpicks per pupil.

HEARING ALONE: "I'm just going to lecture. You may not see what I am doing or ask questions. We're going to make patterns with toothpicks. You do as I say. I want to put one toothpick up and down on the desk; lay another one across it at the middle." (etc., give very general instructions, laying your own on the unlighted overhead. Continue as long as desired.) "Let's see if our figures are alike." (Turn on the overhead; wander around to see some differences.)

HEARING, SPEAKING: "O.K., we won't learn much if all I do is talk. Let's see what happens if you can ask questions." (Again, with an unlighted overhead, give the general directions, allowing them to question you. Compare them.)

HEARING, SPEAKING, SEEING: "Now, what if I let you see what I am doing?" (Use a lighted overhead; repeat the pattern, using new words or asking for definitions. Compare them.)

ALL OF THESE WITHOUT ACTIVE STUDENT INVOLVEMENT: "Up until now, you have also been able to do the things as we talked about them. Suppose we discuss, see, listen, etc. without doing. What will be the result?" (Use a topic with which you are comfortable; swimming, parking a car, football, making pizza, working a complicated manipulative puzzle such as Instant Madness, etc. Then try it.) "Do you see that we need to involve our hands as well to help us learn?"

Fluid grouping involves several avenues that can be used for implementing the techniques presented in "How Do You Learn?".

FLUID GROUPING

Size of Group	Appropriate for:
Single:	Drill and practice of established skills.
Duet:	Developing a new process after presentation: new or revised algorithm, word problems, flow charts, etc.
Trio:	Presentation of new process or algorithm.
Quintet:	Pattern-hunting, discovery, generalization.
Complementary halves of a class:	Execute two parts of one whole idea; two methods of same problem, etc.
Brainstorming whole:	Summary, overview, future ideas.

DUET

Suggested uses:

1. One drill sheet, experiment sheet, for two pupils. Both receive the same credit.
2. A tape recorder or dictation unit for recording student responses and interaction, allowing the students to replay and check their work.
3. Role-playing: teacher-student. The roles must be changed frequently.
4. Role-playing: Executive-secretary (or scribe). Executive dictates, secretary only records. Change roles and new executive may change something done before.

TRIO

This method, generally known as "Echolalia", is a technique to help students understand the learning process as well as learn new techniques. It is a role-playing technique that will require a brief explanation to

the class. It can be pointed out that this is a listening technique; give examples of not really listening (parent-teenager, teacher-student, etc., showing it goes both ways). One way to know if someone has heard the idea (not just the words) is to see if he can echo the concepts in his own words. The observer watches to see if this is done; he does not participate until the end. The helper gives an explanation; the learner echoes the ideas; the helper then echoes the learner to see if he (the helper) has heard correctly.

The procedure should be rigidly followed for a while; it will eventually break into an unstructured trio of listeners.

The teacher instructs the helper of each trio in the new process beforehand. The helper might be a student who finished a previous assignment before the group. Another is labeled the learner; the third is the observer. Cards give instructions for the helper and observer; these could be duplicated and given to the students.

The observer is not expected to learn the new process. After the helper and learner are finished, the observer then gives his observations as to their interaction. It should be stressed to the observer that he is not expected to learn; his task is to see if all the steps are followed.

The roles now shift: learner becomes helper; observer becomes learner and helper becomes observer. The procedure is repeated.

ROLES IN FLUID GROUPING, TRIO

HELPER

1. Give your explanation in your own words.
2. Ask the learner to tell you in his words what you've said.
3. Be sure he heard; ask for other illustrations or examples.
4. If he uses any new words, ask him to define them to see if he really knows what they mean.
5. Repeat what he told you in your own words.

OBSERVER

GENERAL:
1. Did the helper and learner listen to each other?
2. Did they use gestures, pencil and paper, etc. or did they just talk?
3. Were they making sure the other understood?
4. Did they clear up any problems in understanding or did they ignore them?

HELPER:

1. Is he being clear?
2. Did he take time, or did he hurry?
3. Is he explaining new words?
4. Does he wander in his explanation?
5. Does he ask the learner to repeat? Does he then repeat again?
5. Did he do more than just talk to help the other understand?

LEARNER:

1. Does he repeat what he was told?
2. Does he ask for repetition when he doesn't understand?
3. Does he do more than just talk to repeat?
4. Does he know the new process?

QUINTET

This is a means of pattern-discovery. A brief discussion with the entire class is necessary to explain the roles.

The expediter starts the group activity and calls on participants 1, 2 and 3 (in that order) for one single contribution or a pass. He makes no comments unless all 3 pass; then he asks a leading question. He sees that the recorder accurately records. He also calls out "finished" when the group has come to a conclusion.

The recorder makes no comments or contributions; he only records what he is told to when called upon.

A participant makes a contribution (he may direct the recorder to write it down), or he passes.

Upon completion, the recorder reports to the other quintets. He explains what he has recorded and gives the conclusions of the group as he understood them. He answers any questions or challenges that may arise.

The roles shift when going into a new pattern.

DIAGNOSIS

There is one area, "Diagnosis", that needs to be explained in order for the teacher to place the student in the correct groups. By placing the student in correct groups the teacher will be able to work with the needs of each group. Example; the higher group will need less help than the lower groups, therefore they will be able to progress more rapidly through the program and still not place unnecessary pressure on the lower groups because all are working through the program at different rates. This rate is determined by the teacher and the student. If proper care and understanding are given to the students, as well as explanations as to how the tests will be used to diagnose what they know and what they need to learn, most of the students will take the "tests" with the proper attitude. The results will aid the teacher very much in placing the students. The following is how this testing packet can be used to aid the teacher in diagnosising their students.

The next few pages contain three tests (pre, middle, post) involving whole numbers, fractions, decimals, and percents. The teacher should use the pre test to tell what the student knows in the areas defined.

Once this knowledge is gained the students can be placed in the correct grouping. Grading of tests can be done very quickly and easily by using an ice pick to push through the answer sheets all at one time.

The following answer sheet on whole numbers is designed to give the teacher diagnostic information on his student. Along the left side of each answer blank are the objectives designed to be measured by that particular problem. Example: missing problem 1 indicates objectives I-5 and IV-4 have not been mastered.

WHOLE NUMBER ANSWER SHEET
WITH OBJECTIVE REFERENCES

NAME _____ GIRL ____ BOY ____
Last First Middle

TEACHER _____ GRADE _ _____

SCHOOL _____ DATE _____
mo. day yr.

		a	b	c	d	e
I-5 IV-4	1.	0	0	0	0	0
I-4 II-5 III-5	2.	0	0	0	0	0
I-2 I-4 I-10	3.	0	0	0	0	0
I-5 I-6 IV-4	4.	0	0	0	0	0
I-3 II-4	5.	0	0	0	0	0
I-10	6.	0	0	0	0	0
III-2 IV-2	7.	0	0	0	0	0
I-5 I-6 II-4	8.	0	0	0	0	0
I-7 I-8	9.	0	0	0	0	0
I-3 II-4	10.	0	0	0	0	0
I-10 II-3 III-4	11.	0	0	0	0	0
I-4 II-5 III-4	12.	0	0	0	0	0
I-4 I-10	13.	0	0	0	0	0
I-5 IV-3	14.	0	0	0	0	0
I-3 I-4 II-4 II-5 III-5	15.	0	0	0	0	0
I-3 I-5 IV-4	16.	0	0	0	0	0
I-1 II-1 III-2 IV-2	17.	0	0	0	0	0
I-1 I-4 II-2 III-1 III-3	18.	0	0	0	0	0
III-7	19.	0	0	0	0	0
I-6 IV-4	20.	0	0	0	0	0
I-10 III-4 IV-1	21.	0	0	0	0	0
I-4 III-5	22.	0	0	0	0	0
I-1 II-6 III-6	23.	0	0	0	0	0
I-1 I-6 IV-5	24.	0	0	0	0	0
I-3 I-7 I-8	25.	0	0	0	0	0

On the List of Objectives, page vii, objective I-5 states, "Demonstrating the multiplication facts for 0 through 10 without reference to a table." Objective IV-4 states, "Demonstrating multiplication of whole numbers." If a student gives an incorrect answer, the teacher would know that student needs more work in the area of multiplication of whole numbers. At this point many teachers have difficulty in finding activities that correct the deficiency. COLAMDA provides such activities.

PRESCRIPTION AND IMPLEMENTATION

Following is an Item Analysis for the Whole Number Test. In this analysis, the quotation marks are used as part of the BASIC computer language. Another language or another computer would require a slightly different format.

```
"MISSING PROBLEM 1 INDICATES THAT OBJECTIVE 15"
"IV-4, HAVE NOT BEEN MET"

"ACTIVITIES A-13, A-15#1, A-16#1-3, A-17#2, A-21#1-5"
"A-35#1, B-1#1-2, B-2#1-2, C-8,C-9, C-11#1-2, C-14, C-18,"
"C-20, C-34, C-35#6, D-2, D-3, D-4, D-5, D-14, D-24, E-1, E-2,"
"E-10, E-11, E-32, E-33, A-38, E-52, E-59F-5, F-8, F-13#1-2,"
"F-14, K-6, K-11, MAY BE USED TO MEET THE INDICATED"
"OBJECTIVES."

40
"MISSING PROBLEM 2 INDICATES THAT OBJECTIVES 14,115"
"1115 HAVE NOT BEEN MET"

"ACTIVITIES A-15#1, A-16#1-3, A-17#2, A-21#1-5, A-35#1"
"B-1#0,2, B-2#1-2, C-14#1, C-18, C-20, C-34, C-35#6, D-2."
"D-3, D-4, D-5, D-14, D-24, E-1, E-2, E-10, E-32, E-33, E-38"
"E-52, E-59, F-8, F-13#1-2, F-14, K-6, K-11, MAY BE USED"
"TO MEET THE INDICATED OBJECTIVES"
50
"MISSING PROBLEM 3 INDICATES THAT OBJECTIVES 12"
"1-4, 1-10 HAVE NOT BEEN MET."
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"ACTIVITIES A-13#3, A-15#1, A-16#1-3, A-17#2, A-25#1-5"
"A-35#1, B-2#1-2, B-2#1-2, C-2, C-8, C-14#1, C-18, C-20, C-29"
"C-34, C-35#6, D-2, D-3, D-4, D-5, D-14, D-24, E-1, E-2"
"E-10, E-32, E-33, E-38, E-52, E-53, E-59, F-9, F-8, F-13#1-2"
"F-14, K-6, K-11, MAY BE USED TO MEET THE INDICATED"
"OBJECTIVES"


60
"MISSING PROBLEM 4 INDICATES THAT OBJECTIVES  I-5, I-6
"IV-4 HAVE NOT BEEN MET."

"ACTIVITIES A-16#1-3, A-17#1, A-35#1, B-1#1-2, B-2#1-2"
"C-14#1, C-20, C-34, C-35#4, D-2, D-3, D-4, D-5, D-1 4N(GGW); TCE600 P
INT E-2, E-10, E-11, E-32, E-38, E-52R E-59, F-5, F-8, F-13#1-2"
"F-14, K-6, MAY BE USED TO MEET THE INDICATED OBJECTIVES"
70
"MISSING PROBLEM 5 INDICATES THAT OBJECTIVES 1-2"
"11-4 HAVE NOT BEEN MET"

"C-20, C-34, C-35, C-35#3, D-2, D-3, D-4, D-5, D-8, D-13#2"
"D-14, D-24, E-1, E-2, E-10, E-32, E-38, E-52, E-59"
"F-8, F-13#1-2, F-14, I-7#1-3, J-3, K-6 MAY BE USED TO "
"MEET THE INDICATED OBJECTIVES"
80
"MISSING PROBLEM 6 INDICATES THAT OBJECTIVE 1-10
HAS NOT BEEN MET"

"ACTIVITY F-4 MAY BE USED TO MEET THE INDICATED
"OBJECTIVE"
90
"MISSING PROBLEM 7 INDICATES THAT OBJECTIVES 111-2"
"IV-2 HAVE NOT BEEN MET"

"ACTIVITY C-42 MAY BE USED TO MEET THE INDICATED
"OBJECTIVES"
100
"MISSING PROBLEM 8 INDICATES THAT OBJECTIVES 1-5"
"I-6, II-4, II-6, -5 HAVE NOT BEEN MET:

"ACTIVITIES A-7#1, A-13#1-2, A-15#1, A-16#1#3, A-17#2"
"A-21#1-5, A-35#1, B-1#1-2, B-2#1-2, C-14#1"
"C-9, C-18, C-20, C-34, C-35#4, D-2, D-3, D-4, D_5,"
"D-13#2, D-14, D-24, E-1, E-2, E-10, E-11, E-32, E-33"
"E-38, E-52, E-59, F-5, F-8, F-13#1-2, F-14, K-6, K-11"
MAY BE USED TO MEET THE INDICATED OBJECTIVES"
110
"MISSING PROBLEM 9 INDICATES THAT OBJECTIVES:
"1-7, 1-8, HAVE NOT BEEN MET"
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"ACTIVITIES A-16#1#3, A-24#1-2, A-35#1, B-1#1#2, B-2#1#2"
"C-14#1, C-20, C-24, C-35#3, D-2, D-3, D-4,"
"D-5, D-8, D-13#2, D-14, D-24, E-1, E-2, E-10, E-32,"
"E-38, E-52, F-8, F-13#1-2, F-14, I-7#1-3, J-3,"
"K-6 MAY BE USED TO MEET THE INDICATED OBJECTIVES:
13
"MISSING PROBLEM 11 INDICATES THAT OBJECTIVES"
"I-10, II-3, III-4 HAVE NOT BEEN MET"


"ACTIVITIES C-38, E-49#1-2, F-4 MAY BE USED TO MEET"
THE INDICATED OBJECTIVES"
140
"MISSING PROBLEM 12 INDICATES THAT OBJECTIVES"
"I-4, II-5, III-5 HAVE NOT BEEN MET"

"ACTIVITIES A-16#1#3, A-35#1, B-1#1-2, B-2#1-2
"D-5, D-14, D-24, E-1, E-2, E-10, E-32, E-38, E-52"
"E-59, F-8, F-13#1-2, F-14, K-6, MAY BE USED"
TO MEET THE INDICATED OBJECTIVES"
150
"MISSING PROBLEM 13 INDICATES THAT OBJECTIVES
"I-4, I-10 HAVE NOT BEEN MET"

"ACTIVITIES D-13#2, F-4 MAY BE USED TO MEET THE INDICATED OBJECTIVES"
160
MISSING PROBLEM 14 INDICATES THAT OBJECTIVES
"I-5, IV-3 HAVE NOT BEEN MET"

"ACTIVITIES C-9, F-5 MAY BE USED TO MEET THE INDICATED
OBJECTIVES"
170
"MISSING PROBLEM 15 INDICATES THAT OBJECTIVES
"I-3, I-4, II-4, II-5, III-5 HAVE NOT BEEN MET"

"ACTIVITIES A13 #1, A-15#1, A-17#2, A-21#1-5, C-7"
"C-18, C-35#2, D-8, D-13#2, E-33, I-7#1-3, J-3, K-11"
"MAY BE USED TO MEET THE INDICATED OBJECTIVES"
180
"MISSING PROBLEM 16 INDICATES THAT OBJECTIVES"
"I-3, I-5, II-4, IV-4 HAVE NOT BEEN MET"

"ACTIVITIES A-16#1#3, A-35#1, B-1#1-2, B-2#1-2"
"C-7, C-9, C-14#1, C-20, C-34, C-35#3, D-2, D-3"
"D-4, D-5, D-8#1, D-13#2, D-14, D-24, E-1, E-2"
"E-10, E-11, E-32, E-38, E-52, E-59, F-5, F-8, F-13#1-2"
"F-14, I-7#1-3, J-3, K-6 MAY BE USED TO MEET THE
INDICATED OBJECTIVES"
1 0
"MISSING PROBLEM 17 INDICATES THAT OBJECTIVES"
"I-1, II-1, III-2, IV-2 HAVE NOT BEEN MET"
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"ACTIVITIES C-43, E-34, E-23 MAY BE USED TO MEET THE
INDICATED OBJECTIVES"
200
"MISSING PROBLEM 18 INDICATES THAT OBJECTIVES"
"I-1, II-2, IV-2 HAVE NOT BEEN MET"

"ACTIVITIES A-1#1-6, A-1#8-10, A-12, A-34#1, C-7"
"C-21, C-30, C-38, C-43, C-50, C-51, E-34, F-23, I-9, J-2"
"MAY BE USED TO MEET THE INDICATED OBJECTIVES"
210
"MISSING PROBLEM 19 INDICATES THAT OBJECTIVES
III-7 HAS NOT BEEN MET"
220
"MISSING PROBLEM 20 INDICATES THAT OBJECTIVES
"I-6, IV-4 HAVE NOT BEEN MET"


"ACTIVITIES A-7#1, C-35#4, E-11 MAY BE USED TO MEET THE
INDICATED OBJECTIVES"
230
"MISSING PROBLEM 21 INDICATES THAT OBJECTIVES
"I-10, III-4, IV-1 HAVE NOT BEEN MET"

"ACTIVITIES E-49#1-2, F-4 MAY BE USED TO MEET THE
INDICATED OBJECTIVES"
240
"MISSING PROBLEM 22 INDICATES THAT OBJECTIVES
"I-4, III-5 HAVE NOT BEEN MET"

"ACTIVITIES C-8, C-35#6 MAY BE USED TO MEET THE
INDICATED OBJECTIVES"
250
"MISSING PROBLEM 23 INDICATES THAT OBJECTIVES
"I-1, II-6 HAVE NOT BEEN MET "

"ACTIVITIES A-16#1#3, A-35#1, B-1#1-2, B-2#1-2"
"C-14  , C-20, C-34, D-2, D-3, D-4, D-5, D-14, D-24, E-1"
"E-2, E-10, E-32, E-38, E-52, E-59, F-8, F-13#1-2"
"I-14, K-6 MAY BE USED TO MEET THE INDICATED
OBJECTIVES"
260
"MISSING PROBLEM 24 INDICATES THAT OBJECTIVES"
"I-1, II-6, IV-5 HAVE NOT BEEN MET"
ACTIVITIES A-16#1#3, A-35#1, B-1#1-2, B-2#1-2, C-14#1"

"C-20, C-34, D-2, D-3, D-4, D-5, D-14, D-24, E-1, E-2, E-10
"E-32, E-38, E-52, E-59, F-8, F-13#1-2, F-14, K-6 MAY BE
USED TO MEET THE INDICATED OBJECTIVES"
270
"MISSING PROBLEM 25 INDICATES THAT OBJECTIVES"
"I-1, II-4 HAVE NOT BEEN MET"

"ACTIVITIES A-16#1#3, A-35#1, B-1#1-2, B-2#1-2, C-14#1
"C-20, C-34, D-2, D-3, D-4, D-5, D-13#2, D-14, D-24
"E-1, E-2, E-10, E-32, E-38, E-52, E-59, F-8, F-13#1-2"
"F-14, K-6 MAY BE USED TO MEET THE INDICATED OBJECTIVES"
```

The item analysis indicates what COLAMDA activities are available to be used to correct the deficiency as indicated by the whole number answer sheet. This saves the teacher much work in selecting appropriate materials. It also makes grouping of students with similar deficiencies much easier. Once the groups are formed they are likely to remain motivated because the students in the different groups have the same difficulties. One teacher can keep three different groups operating successfully. There will be fewer discipline problems because students are involved in actually helping each other learn mathematics.

USE OF THE COMPUTER FOR THE TESTING PROGRAM

INTRODUCTION

A teacher might say: "I think the ideas presented so far are excellent, but I don't have enough time." Because teachers don't have enough time, techniques were developed to use the computer in conjunction with the COLAMDA testing program.

The testing program remains the same, but the computer will be used to print out a diagnosis of each student's deficiency. The teacher must make some arrangements to use the computer and to have cards punched. In some schools, students in key punch classes will punch the necessary cards. Once the system is set up and in operation the teacher saves much valuable time.

PROCEDURE

Pre tests are administered and incorrect responses are recorded for each student. The computer will identify the objectives in which each student shows a deficiency.

COLAMDA Test Analysis Test Data Composite

Test Name _____

Teacher _____

School _____

Period _____

Student Name	Incorrect Responses
John Davis	1,8,9,12,15,24
Bill Morris	2,7,15
Judy Wilson	1,9,14,15,26
Connie Brandt	4,7,10,14,16,20,22
James Ledder	5,9,14
Phil Nelson	1,2,5,8,11
Barbara Knapp	9,10,19,23,26

SAMPLE COMPUTER PRINT OUT SHEET

Student Name	Teacher Name	Class	School
HEADRICK	COLVIN	PERIOD-1	HINKLEY

**********MISSING PROBLEM 03 INDICATES MISSED OBJECTIVES

I-2 DEMONSTRATE USING COMMON MEASURING INSTRUMENTS TO NEAREST WHOLE NO.

I-4 SUBTRACTION OF WHOLE NUMBERS THRU THOUSANDS, BORROWING FROM 1 PLACE.

I-10 INTERPRETING BY ESTIMATING ANSWERS, USING ANY BASIC OPERATION.

**********MISSING PROBLEM 23 INDICATES MISSED OBJECTIVES
I-1 NAMING WHOLE NUMBERS 0-99 AND 100-1000 WITHOUT INTERMEDIATE ZEROS.
II-6 DIVISION THRU THOUSANDS BY A 2 DIGIT NUMBER WITH 1 SIGNIFICANT DIGIT
III-6. DIVISION THRU HUNDRED THOUSANDS BY 3 DIGITS WITH 1 SIGNIFICANT DIGIT

**********MISSING PROBLEM 10 INDICATES MISSED OBJECTIVES
I-3 DEMONSTRATE ADDITION OF WHOLE NUMBERS THRU A 4x4 ARRAY.
II-4 ADDITION OF WHOLE NUMBERS.

**********MISSING PROBLEM 14 INDICATES MISSED OBJECTIVES
I-5 MULTIPLICATION FACTS FOR 0-10 WITHOUT REFERENCE TO A TABLE.
IV-3 CHANGING AN EXPRESSION TO ITS FACTORED AND WHOLE NUMBER EQUIVALENT.

**********MISSING PROBLEM 15 INDICATES MISSED OBJECTIVES
I-3 DEMONSTRATE ADDITION OF WHOLE NUMBERS THRU A 4x4 ARRAY.
I-4 SUBTRACTION OF WHOLE NUMBERS THRU THOUSANDS, BORROWING FROM 1 PLACE.
II-4 ADDITION OF WHOLE NUMBERS.
II-5 SUBTRACTION OF WHOLE NUMBERS THRU HUNDRED THOUSANDS.
III-5 SUBTRACTION.

**********MISSING PROBLEM 17 INDICATES MISSED OBJECTIVES
I-1 NAMING WHOLE NUMBERS 0-99 AND 100-1000 WITHOUT INTERMEDIATE ZEROS.
II-1 NAMING WHOLE NUMBER SYMBOLS THRU THE HUNDRED THOUSANDS.
III-2 WRITING THE WORDS FOR NUMBERS 0-100.
IV-2 WRITING THE WORDS FOR NUMBERS THRU THOUSANDS.

**********MISSING PROBLEM 19 INDICATES MISSED OBJECTIVES
III-7 DIVISION THRU TEN THOUSANDS BY A 2 DIGIT NUMBER.

**********MISSING PROBLEM 22 INDICATES MISSED OBJECTIVES
I-4 SUBTRACTION OF WHOLE NUMBERS THRU THOUSANDS, BORROWING FROM 1 PLACE.
III-5 SUBTRACTION.

The teacher can with some effort group students with similar deficiencies and use the COLAMDA objective sheet for suitable activities.

EXAMPLE:

John misses problem 2 on the whole number test. The teacher will receive a print out of the following objectives.

I-4 (SUBTRACTION OF WHOLE NUMBERS THRU THOUSANDS, BORROWING 1 PLACE)
II-5 (MULTIPLICATION FACTS FOR 0-10 WITHOUT REFERENCE TO A TABLE.)
III-5 (SUBTRACTION)

The COLAMDA objective sheet for whole numbers lists activities that can be used to correct the deficient objectives. These activities are listed under several headings:

	WHOLE NUMBER OBJECTIVES			
LEVEL I	PRINTED SOFTWARE	HARDWARE	MANIPULATIVE AND CONCRETE MATERIALS	...
1. Naming whole numbers: a. 0 through 99 b. 100 through the thousands without intermediate zeros	A-1 #1-6 A-1 #8-10 A-34 #2 A-12		C-7 C-21 C-30 C-38 C-50 C-51	
2. Demonstrating using common measuring instruments to the nearest whole number			C-29 C-2	

The following activities can be used to help remove deficiencies:

I-4 (C-8, C-35 #3)
II-5 (TEXTBOOK)
III-5 (TEXTBOOK)

Addition and subtraction combinations (A-13 #1; A-15 #1, A-21 #1-5; A-17 #2; C-18; E-33; K-11) may be used.

Programs can be written to print out what activities could be used to over come deficiencies but the COLAMDA objective sheet will accomplish the same purpose.

With hard work on the part of the teacher and with the help of the computer a mathematics program for the low achiever can be developed and implemented with a high degree of success.

TESTS

IN

INDIVIDUAL SHEETS

PRE-POST TESTING INDEX

Section 1

Whole Numbers — Pages

Pre-Test, Whole Numbers ("Those answers are in here somewhere!") 1

Key to Test 7

Middle Test 8

Key to Test 10

Post Test 11

Answer Sheet 19

Key to Test 21

Decimal Fractions

Pre Test, Decimals ("Me! I don't worry about decimal points.") 22

Answer Sheet 26

Key to Test 27

Item Analysis for Decimals 28

Post Test ("The mysterious decimal point") 30

Answer Sheet 36

Key to Test 38

Item Analysis for Decimals 39

Decimals (skills) Test 41

Answer Sheet 43

Key to Test 44

Fractions Pages

Pre Test 45

Answer Sheet 47

Key to Test 48

Fractions 49

Answer Sheet 51

Key to Test 52

Item Analysis for Fractions 53

Post Test 54

Answer Sheet 57

Key to Test 58

Item Analysis for Fractions 59

Percentage

Pre-Test 60

Answer Sheet 63

Post Test 64

Answer Sheet 67

Key and Item Analysis 68

For additional Pre and Post Test reference turn to section II

WHOLE NUMBER TEST

WHOLE NUMBERS

1. Find the missing number:

$$\begin{array}{r} ?7 \\ \times\ 4 \\ \hline 228 \end{array}$$

(a) 20 (b) 3 (c) 4 (d) 5 (e) None of these

2. Find the missing number:

$$\begin{array}{r} 633 \\ -139 \\ \hline 4?4 \end{array}$$

(a) 0 (b) 1 (c) 8 (d) 9 (e) None of these

3. According to the clock how much time will pass before it is 8:00:

(a) 6 hrs. 25 min.

(b) 7 hrs. 25 min.

(c) 6 hrs. 35 min.

(d) 7 hrs. 35 min.

(e) None of these

4. Forty-seven nails of the same size weighed one pound. How many nails would there be in 65 pounds:

(a) 2,457

(b) 3,055

(c) 5,416

(d) 4,555

(e) None of these

WHOLE NUMBERS

5. 250 + 36 + 2,050 + 89 =

(a) 2,325
(b) 2,326
(c) 2,425
(d) 2,426
(e) None of these

6. The best way to ESTIMATE the product of 317 and 691 is:

(a) 300 x 600
(b) 300 x 700
(c) 400 x 600
(d) 400 x 700
(e) None of these

7. Which of these numbers is Twelve Thousand Thirty Five?

(a) 1235
(b) 12035
(c) 120035
(d) 1200035
(e) None of these

8. Find the missing number:

$$\begin{array}{r} 346 \\ \times\ \ 72 \\ \hline 692 \\ 242? \\ \hline 24912 \end{array}$$

(a) 0 (b) 2 (c) 6 (d) 8 (e) None of these

9. Find the missing number:

$$
\begin{array}{r}
?8 \\
4 \overline{)\,192} \\
16 \\
\hline
32 \\
32 \\
\hline
0
\end{array}
$$

(a) 6 (b) 7 (c) 8 (d) 9 (e) None of these

10. Find the missing number:

$$
\begin{array}{r}
487 \\
735 \\
268 \\
\hline
1,4?0
\end{array}
$$

(a) 5 (b) 7 (c) 8 (d) 9 (e) None of these

11. The number 364 rounded off to the nearest ten would be:

(a) Thirty-six
(b) Three hundred sixty
(c) Sixty-four
(d) Four hundred
(e) None of these

12. REMINGTON #711 ... #711 without trade 249.50
199.50 with trade

electric with carriage return and 11-paper capacity.

With trade there is a savings of _____

(a) $50.00
(b) $40.00
(c) $150.00
(d) $49.00
(e) None of these

WHOLE NUMBERS

13. What should be next in this series 57,64,71,78 _____?

(a) 79 (b) 81 (c) 85 (d) 88 (e) None of these

14. 2^3 is another way of writing the number:

(a) 8 (b) 6 (c) 23 (d) 9 (e) None of these

15. 1,546 + 5,454 - 367 = ?

(a) 6633
(b) 6733
(c) 6643
(d) 6743
(e) None of these

16. (16 x 7) + (10 x 7) + (24 x 7) =

(a) 352
(b) 346
(c) 350
(d) 356
(e) None of these

17. 2005 is read:

(a) Two hundred five
(b) Twenty thousand five
(c) Two thousand five
(d) Two hundred thousand five
(e) None of these

18. Arrange the following from the smallest number to the largest number.
214,120,054; 4,238: 500: 70,246

(a) 214,120,054, 500, 70,246, 4,238
(b) 500, 4,238, 70,246, 214,120,054
(c) 500, 70,246, 4,238, 214,120,054
(d) 500, 214,120,054, 4,238, 70,246
(e) None of these

19.

How many stars can be made from one box of toothpicks?

(a) 125
(b) 100
(c) 1240
(d) 250
(e) None of these

20.

Found in South America

A termite queen lays 1 egg every second for up to 30 years. How many eggs does she lay in 8 hours?

(a) 480
(b) 240
(c) 14,400
(d) 28,800
(e) None of these

21. A national debt is $358,218,756,918.00
This is approximately:

(a) 360 Billion
(b) 36 Billion
(c) 35 Hundred Million
(d) 3 Hundred Billion
(e) 350 Billion

22. 3462 - 1492 = _____

(a) 2030
(b) 1950
(c) 2070
(d) 1970
(e) None of these

23. Find the missing number

$$
\begin{array}{r}
2,20? \\
122\overline{)\,268,766} \\
\underline{244} \\
247 \\
\underline{244} \\
366 \\
\underline{366}
\end{array}
$$

(a) 1
(b) 2
(c) 3
(d) 4
(e) None of these

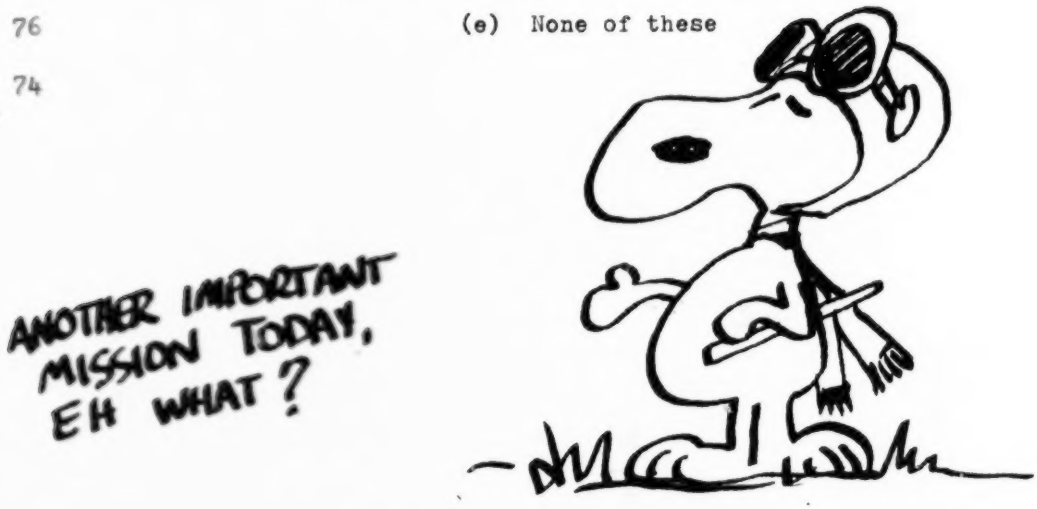
24. $8673 \div 413 =$ _____

(a) 22
(b) 32
(c) 21
(d) 201
(e) None of these

25. Find the average of the following golf scores:

76, 80, 70, 66

(a) 292
(b) 76
(c) 74
(d) 73
(e) None of these



WHOLE NUMBER - KEY

1. (d)
2. (d)
3. (c)
4. (b)
5. (c)
6. (b)
7. (b)
8. (b)
9. (e)
10. (d)
11. (b)
12. (a)
13. (c)
14. (a)
15. (a)
16. (c)
17. (c)
18. (b)
19. (a)
20. (d)
21. (a)
22. (d)
23. (c)
24. (c)
25. (d)

WHOLE NUMBERS

ADD

1. 17
   29
   78
   85
   34

2. 2176
   3429

3. 2943
   34
   176
   2053

4. 27965
   30609
   22079
   30705
   50078

SUBTRACT

5. 546
   227

6. 1943
   849

7. 2050
   1564

8. 907086
   548299

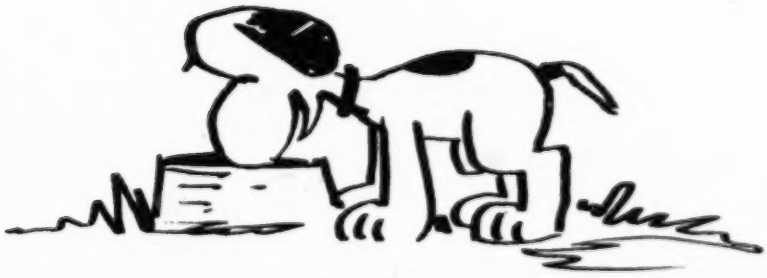
MULTIPLY

9. 247
   24

10. 306
    35

11. 688
    271

12. 2516
    137



13. $15\overline{)255}$

14. $24\overline{)504}$

15. $18\overline{)3654}$

16. $32\overline{)19016}$

WHOLE NUMBERS

ADD

1. 17 + 29 + 78 + 85 + 34 = 243

2. 2176 + 3429 = 5605

3. 2943 + 34 + 176 + 2053 = 5206

4. 27965 + 30609 + 22079 + 30705 + 50078 = 161436

SUBTRACT

5. 546 − 227 = 319

6. 1943 − 849 = 1094

7. 2050 − 1564 = 486

8. 907086 − 548299 = 358787

MULTIPLY

9. 247 × 24 = 5928

10. 306 × 35 = 10710

11. 688 × 271 = 18448

12. 2516 × 137 = 344692

13. $15 \overline{)225}$ = 15

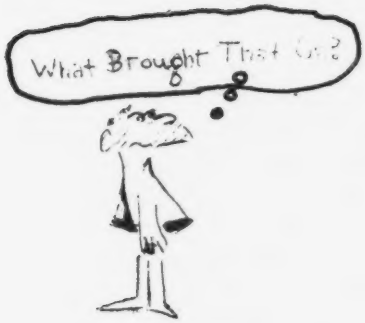
14. $24 \overline{)504}$ = 21

15. $\overline{)3654}$ = 203

16. $\overline{)19616}$ = 613

MIDDLE TEST ANSWER KEY

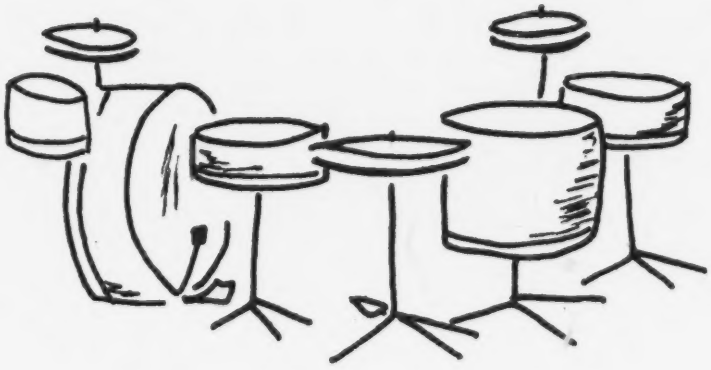
1. 243
2. 5,605
3. 5,206
4. 161,436
5. 319
6. 1,094
7. 486
8. 358,787
9. 5,928
10. 10,710
11. 186,448
12. 344,692
13. 15
14. 21
15. 203
16. 613



1. Fill in the blanks using multiplication.

4	2	·
3	1	·
		·

2. How much money would you save by buying set #2?



$201.00

$129.00

3. Liftoff for Apollo 15 was 7:34 a.m., M.D.T., July 26. A crucial midcourse correction was schedulted for 1:18 p.m., M.D.T., July 26. How long into the flight was this correction?

(a) 6 hrs. 16 min. (b) 8 hrs. 52 min. (c) 5 hrs. 44 min.

(d) 29 hrs. 26 min. (e) None of these

4. If the Central High Pep Band wishes to purchase 2 Jumbo Guitars for their new rock sound, how much money will they need to collect on tag day?

JUMBO

size and sound

$64.00

5. Find the total yardage gained by the West Jr. High Football Team last year.

1 game	2 game	3 game	4 game	5 game	6 game	7 game
251	37	440	324	183	69	1004

6. The best way to ESTIMATE the product of 519 and 422 is:

(a) 500 x 5000

(b) 500 x 500

(c) 500 x 400

(d) 600 x 400

(e) None of these

7. This number in Roman Numerals is one thousand six--MVI. Which of these numbers names the same number.

(a) 1060

(b) 1006

(c) 1600

(d) 10006

(e) 106

(f) None of these

8. Find the missing numbers: Put the numbers in the boxes.

$$\begin{array}{r} 8\square 3 \\ \times\ \ 29 \\ \hline 75\square 7 \\ 1686 \\ \hline 2\square 447 \end{array}$$

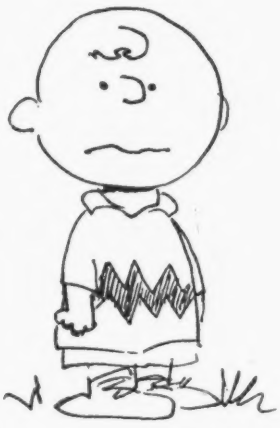
9. Find the missing numbers: Put the numbers in the empty boxes.

$$\begin{array}{r|l} & 1\square 0\square \\ \hline 6 & 6024 \\ & 6 \\ \hline & 024 \\ & \square 2\square \\ \hline \end{array}$$

10.

4	7	9	6	
12	11	3	8	
15	10	7	5	
27	8	13	6	
1	3	5	8	

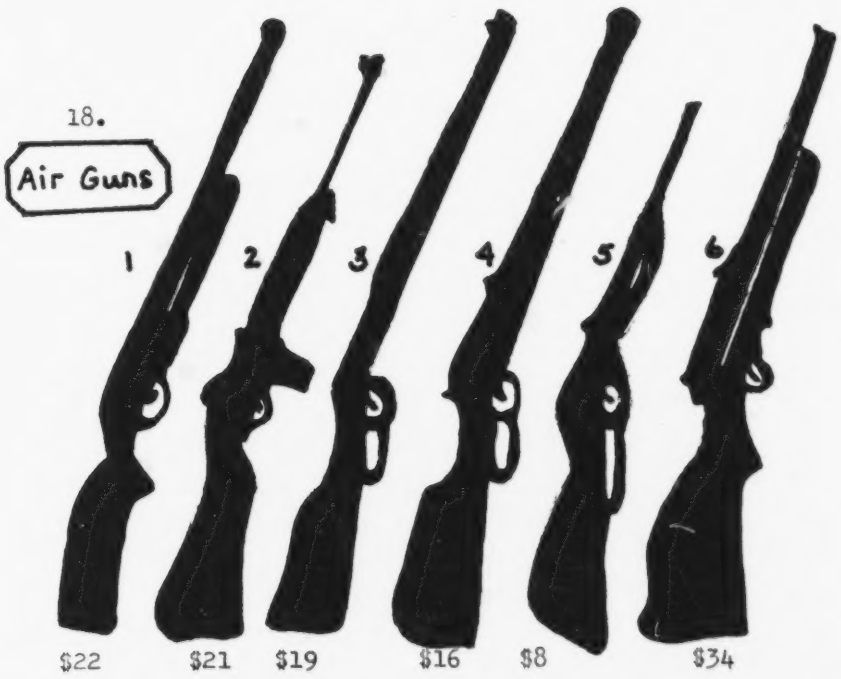
Add the columns both vertically and horizonally.



11. Round each of the following numbers to the nearest dollar: Then add

1" x54" x75" FOAM MATTRESS	2" x54" x75" FOAM MATTRESS	3" x54" x75" FOAM MATTRESS	4" x54" x75" FOAM MATTRESS	5" x54" x75" FOAM MATTRESS
List 6.75... 3.98	List 13.98... 7.49	List 19.96... 11.49	List 26.60... 14.98	List 32.50 18.98

18.

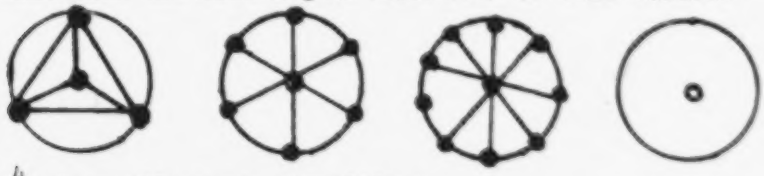


Arrange from the largest to the smallest numbers.

19. Cannibals Soup Company is making missionary soup this week. How many 12 lb. cannisters could be made from a 228 lb. missionary?

12. Sears best--Our best .22 automatic rifle---$77.00 without trade--
$54.00 with trade. How much do you save by having a trade-in?

13. What does the next figure look like in this series?



14. 3^4 is another way of writing:

(a) 64 (c) 27

(b) 12 (d) 81

15. What number is 112 less than 185?

16. What is the total cost of the Jones' Medical Bill?

7 teeth removed at $12 each

2 broken arms at $29 each

1 heart transplant $8,000

4 trips to the "Head Shrinker"
at $25 a visit

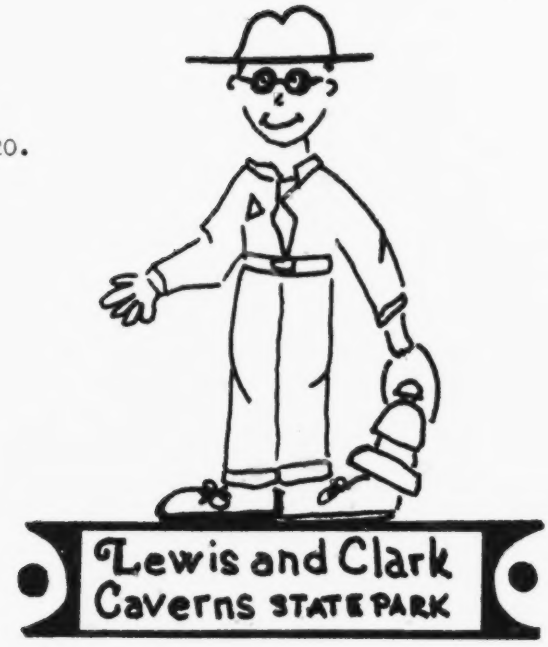
17. 5070 is read:

(a) Five hundred seven (d) Five hundred thousand seventy

(b) Fifty thousand seventy (e) None of these

(c) Five thousand seven

20.



During the 5 months from May to September, an average of 135 people visit the Lewis and Clark Caverns every day. At this rate, how many visited the caverns in July (31 days)?

21. The population of the world in July was 3,567,423,893. This is about:

(a) 40 billion

(b) 4 billion

(c) 3 billion

(d) 3 million

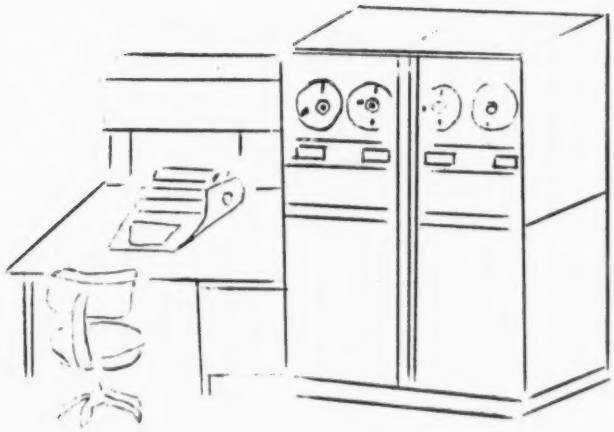
(e) none of these

22. America was discovered in 1492. How many years ago was this?

23.

$$
\begin{array}{r}
40\square\square \\
123\overline{)\,492,861} \\
492 \\
\hline
08 \\
0 \\
\hline
86 \\
00 \\
\hline
861 \\
861 \\
\hline
\end{array}
$$

24. Hinkley High purchased the IBM 1130 Computer for $107,676 for one year. What was the cost per month?



25. Find the average of the following golf scores:

54 49 45 43 34

WHOLE NUMBER ANSWER SHEET
WITH OBJECTIVE REFERENCES

NAME _____ GIRL _____ BOY _____
Last First Middle

TEACHER _____ GRADE _____

SCHOOL _____ DATE _____
mo. day yr.

I-5 IV-4	1.	a 0	b 0	c 0	d 0	e 0	I-3 I-4 II-4	15.	a 0	b 0	c 0	d 0	e 0			
I-4 II-5 III-5	2.	a 0	b 0	c 0	d 0	e 0	II-5 III-5									
I-2 I-4 I-10	3.	a 0	b 0	c 0	d 0	e 0	I-3 I-5 IV-4	16.	a 0	b 0	c 0	d 0	e 0			
I-5 I-6 IV-4	4.	a 0	b 0	c 0	d 0	e 0	I-1 II-1 III-2 IV-2	17.	a 0	b 0	c 0	d 0	e 0			
I-3 II-4	5.	a 0	b 0	c 0	d 0	e 0	I-1 I-4 II-2	18.	a 0	b 0	c 0	d 0	e 0			
I-10	6.	a 0	b 0	c 0	d 0	e 0	III-1 III-3									
III-2 IV-2	7.	a 0	b 0	c 0	d 0	e 0	III-7	19.	a 0	b 0	c 0	d 0	e 0			
I-5 I-6 II-4	8.	a 0	b 0	c 0	d 0	e 0	I-6 IV-4	20.	a 0	b 0	c 0	d 0	e 0			
I-7 I-8	9.	a 0	b 0	c 0	d 0	e 0	I-10 III-4 IV-1	21.	a 0	b 0	c 0	d 0	e 0			
I-3 II-4	10.	a 0	b 0	c 0	d 0	e 0	I-4 III-5	22.	a 0	b 0	c 0	d 0	e 0			
I-10 II-3 III-4	11.	a 0	b 0	c 0	d 0	e 0	I-1 II-6 III-6	23.	a 0	b 0	c 0	d 0	e 0			
I-4 II-5 III-4	12.	a 0	b 0	c 0	d 0	e 0	I-1 I-6 IV-5	24.	a 0	b 0	c 0	d 0	e 0			
I-4 I-10	13.	a 0	b 0	c 0	d 0	e 0	I-3 I-7 I-8	25.	a 0	b 0	c 0	d 0	e 0			
I-5 IV-3	14.	a 0	b 0	c 0	d 0	e 0										

WHOLE NUMBER TEST

NAME _____

I-5
IV-4

1.

4	2	
3	1	

I-4
II-5
III-5

2. _____

I-2
I-4
I-10

3. _____

I-5
I-6
IV-4

4. _____

I-3
II-4

5. _____

I-10

6. _____

III-2
IV-2

7. _____

I-5
I-6
II-4

8.
$$\begin{array}{r} 8_3 \\ \times \quad 29 \\ \hline 75_7 \\ 1686 \\ \hline 2_447 \end{array}$$

I-7
I-8

9.
$$6\overline{)6024}\quad 1_0_$$
$$\begin{array}{r} 6 \\ \hline 024 \\ _2_ \end{array}$$

I-3
II-4

10.

4	7	9	6	
12	11	3	8	
15	10	7	5	
27	8	13	6	
1	3	5	8	

I-10
II-3
III-4

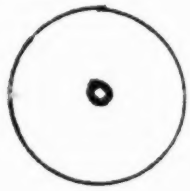
11. _____, _____, _____, _____, _____

I-4
II-5
III-4

12. _____

I-4
I-10

13.



I-5
IV-3

14. _____

I-3
I-4
II-4
II-5
III-5

15. _____

I-3
I-5
IV-4

16. _____

1-1
II-1
III-2
IV-2

17. _____

I-1
I-4
II-2
III-1
III-3

18. ___, ___, ___, ___, ___, ___

III-7

19. _____

I-6
IV-4

20. _____

I-10
III-4
IV-1

21. _____

I-4
III-5

22. _____

I-1
II-6
III-6

23. _____, _____

I-1
I-6
IV-5

24. _____

I-3
I-7
I-8

25. _____

KEY

1)

		8
		3
12	2	24

2) $72.00

3) c

4) $1792

5) 2308

6) c

7) b

8)

9)

10)

				26
				34
				37
				54
				17
59	39	37	33	168

11) $4, $7, $11, $15, $19 = 56

12) $23

13)

14) d

15) 73

16) 8242

17) b

18) 5,4,3,2,1,6

19) 19

20) 4185

21) b

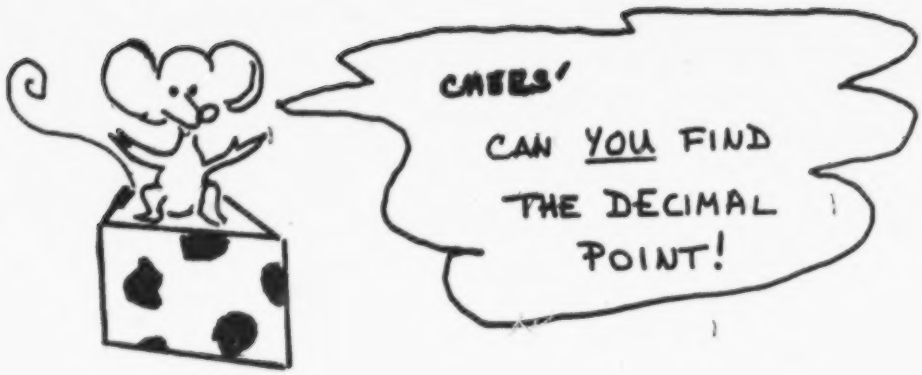
22) 479

23)

24) 38,973

25) 45

ME!
I DON'T WORRY
ABOUT DECIMAL
POINTS!



1. If the sum of 4.3 + 6.08 + 25.01 + 16.003 is 51393 without the decimal point, where should the decimal point go?

   (a) 513.93 (b) 51.393 (c) .00051393
   (d) .051393 (e) None of these

2. Your mother subtracted your puppy's weight in July from his weight in September to find out how much he gained. If she subtracted 6.08 pounds from 14.3 pounds and figured out he gained 822 pounds, how should you change her answer?

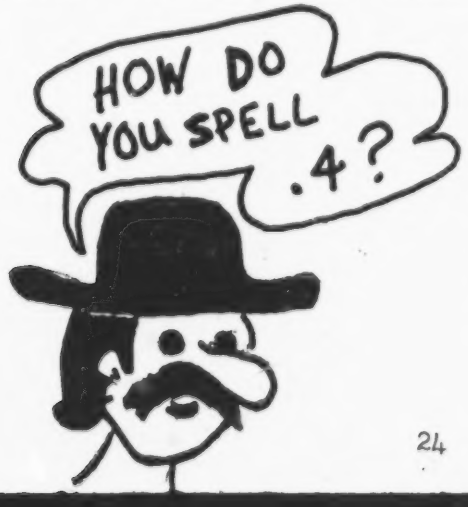
   (a) .822 (b) .0822 (c) 8.22 (d) 82.2 (e) None of these

3. Sam multiplies 4,86 x 3.1 and gets the digits 15066 for his answer. Where does the decimal point go?

   (a) 15.066 (b) 150.66 (c) 1.5066 (d) 15066 (e) .15066

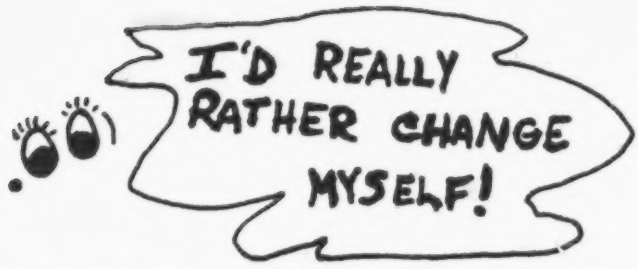
4. Ted divides 44.044 by 4.4 and gets 1001 for the digits in his answer. Where does the decimal point go?

   (a) 10.01 (b) 1.001 (c) 1.001 (d) .1001 (e) 1001

5. 

   How would this decimal .601 be read in words?

   (a) six hundred one hundredths
   (b) six hundred one thousandths
   (c) six hundred and one thousandth
   (d) six and one hundredth
   (e) None of these

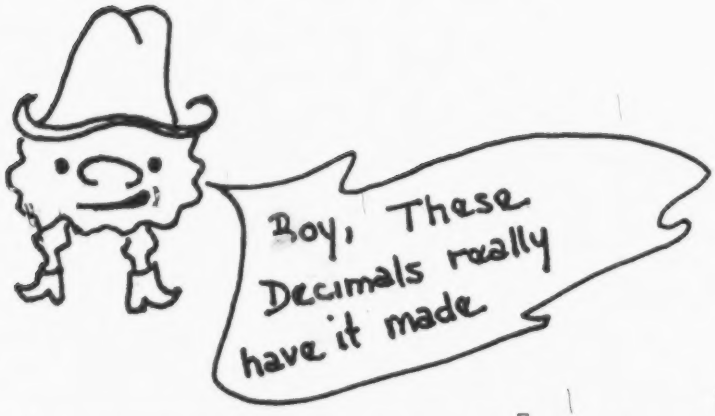


Change the decimal .053 to a fraction.

(a) $\frac{53}{100}$ (b) $\frac{53}{10}$

(c) $\frac{53}{10000}$ (d) $\frac{53}{1000}$

(e) None of these



Change the decimal .87 to a fraction.

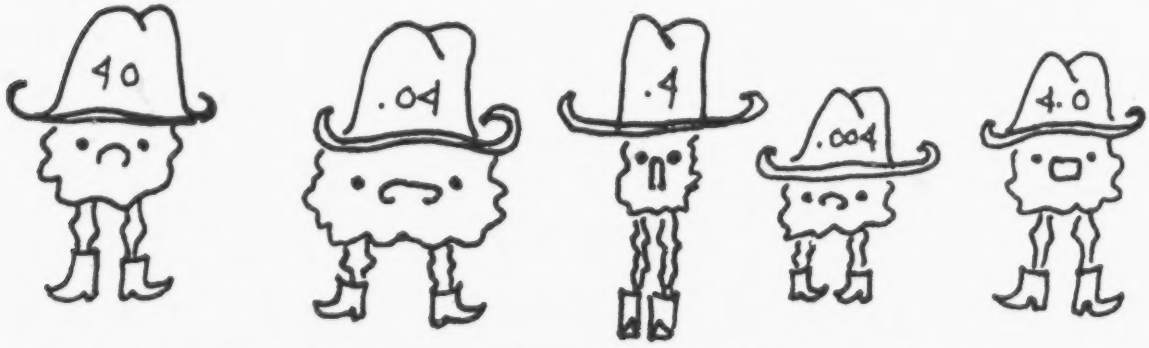
(a) $\frac{87}{10}$ (b) $\frac{87}{100}$

(c) $\frac{7}{8}$ (d) 87

(e) $\frac{87}{1000}$

8. If someone told you he had $\frac{7}{100}$ of a dollar, how would you write it in decimal form?

(a) .70 (b) 7.00 (c) .07 (d) .007 (e) None of these



9. If Willy the Warts kids were arranged from smallest to LARGEST, how would they go?

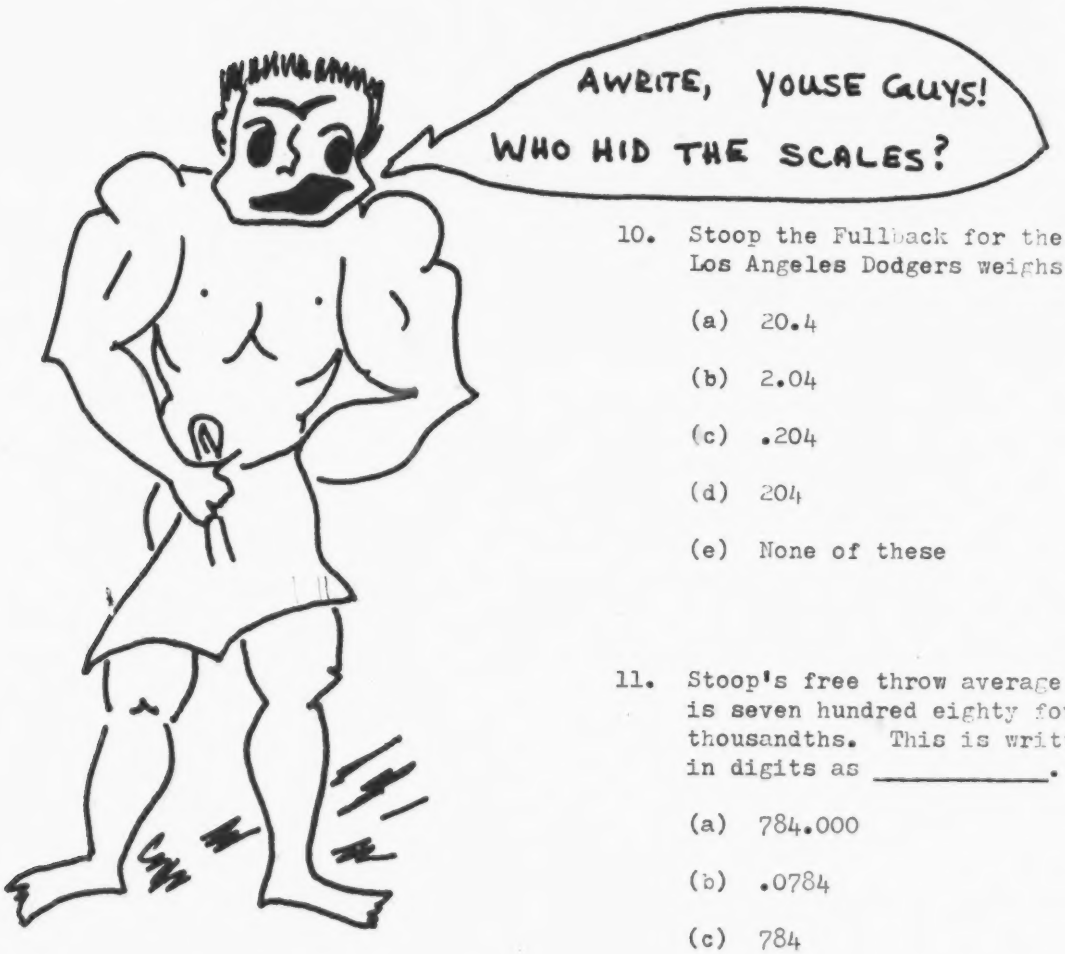
(a) .4, 40, .004, .04, 4.0

(b) 40, .4, .004, .04, 4.0

(c) .04, .004, 4.0, 40, .4

(d) .004, .04, .4, 4.0, 40

(e) .004, .04, 4.0, 40, .4



10. Stoop the Fullback for the Los Angeles Dodgers weighs _____lbs.

(a) 20.4

(b) 2.04

(c) .204

(d) 204

(e) None of these

11. Stoop's free throw average is seven hundred eighty four thousandths. This is written in digits as _____.

(a) 784.000

(b) .0784

(c) 784

(d) .784

(e) None of these

DECIMAL TEST NO. ANSWER SHEET

(Me! I Don't Worry About Decimal Points)

NAME _____ SCORE _____

SCHOOL _____ DATE _____

	a	b	c	d	e
1.	0	0	0	0	0
2.	0	0	0	0	0
3.	0	0	0	0	0
4.	0	0	0	0	0
5.	0	0	0	0	0
6.	0	0	0	0	0
7.	0	0	0	0	0
8.	0	0	0	0	0
9.	0	0	0	0	0
10.	0	0	0	0	0
11.	0	0	0	0	0

KEY TO DECIMAL TEST NO.

(Me! I Don't Worry About Decimal Points)

1. b
2. c
3. a
4. a
5. b
6. d
7. b
8. c
9. d
10. d
11. d

ITEM ANALYSIS FOR DECIMALS TEST NO.

(Me! I Don't Worry About Decimal Points)

1. A-13,#4; A-22,#1; A-23,#1; A-26,#1; A-37,#34-#42; A-111,#1,#2; A-122; B-7; B-13; B-16; B-301; C-31; C-32; C-56; D-1; E-54,#1-#3; E-55; E-105#1; E-111; F-9; G-402,#1-#6; H-2,#1; H-9,#1,#2; H-16,#1,#2; H-23; I-2; I-4; I-8; J-1,#1,#2; K-1; K-15; K-17; N-662; N-1653

2. A-13,#4; A-211; B-8; E-55; G-201; H-9,#1,#2; H-13,#1; H-19,#1-#3; H-21,#1,#2; I-206; K-201; K-205; N-662; N-1653

3. A-111,#3; A-114,#1-#3; A-115, #1; A-123; B-7; C-48,#1; D-21 E-56; E-11,#3,#4; G-202; I-1; I-15; K-2; K-4,#1,#3; K-10; N-1653.2

4. A-111,#4; A-124; B-301; C-48,#1,#2; C-52; E-44; E-45; E-108; E-111,#5,#6; F-1; F-21; F-25; G-202; H-10,#1-#3; H-11,#1-#5; K-201; N-667.1; N-1653.3; N-2203; N-2004

5. A-28,#1,#2; A-110,#1-#4

6. A-32,#1; A-36,#1; A-110; C-17,#1,#2; C-41; E-109

7. Same as number 6

8. A-1,#7,#11; A-10,#1; A-28,#1,#2; A-37,#27-#29; C-41; D-6 E-56; F-9; I-5; I-16

9. A-1,#7,#11; A-28,#1,#2; A-36,#1; E-56; I-5; I-16

10. A-28,#1,#2; A-110,#1-#4

11. A-28,#1,#2; A-110,#1-$4

NAME_____
PERIOD_____

DECIMALS

ADD

1. .8+.7+.3+.2 =

2. .9+.15+.008+.54+.3 =

3. .15+.05+.025+.2008+.4 =

4. 252.49+28.17+9.6+15.024 =

SUBTRACT

5. 6.276-1.042 =

6. 94.78-15 =

7. 8.14-6.1 =

8. 1.9-.674 =

MULTIPLY

9. .7x.5 =

10. .84x5 =

11. .862x.2 =

12. .0004x.8 =

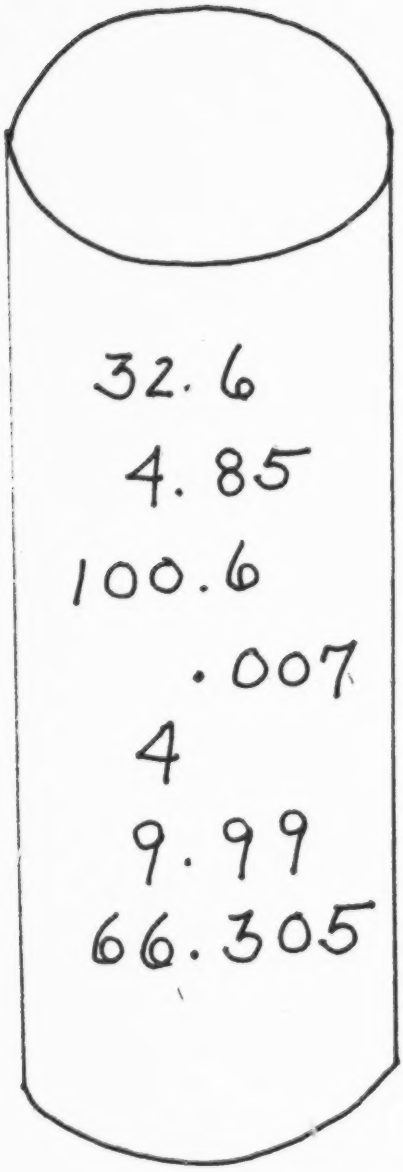
DIVIDE

13. $3\overline{)6.6}$

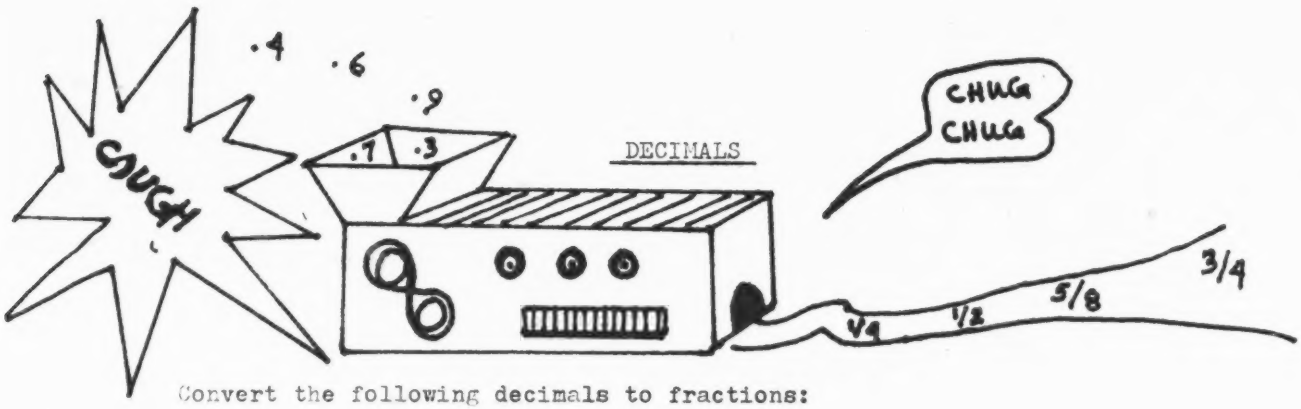
14. $16\overline{)9.6}$

15. $.8\overline{).648}$

16. $1.8\overline{)9}$



"WE CAN DO IT"



Convert the following decimals to fractions:

1. .7 = ?

(a) $\frac{10}{7}$ (b) $\frac{7}{10}$ (c) $\frac{7}{100}$ (d) Seven tenths (e) None of these

2. .88 = ?

(a) $\frac{8}{88}$ (b) $\frac{8}{800}$ (c) $\frac{88}{100}$ (d) $\frac{10}{88}$ (e) None of these

3. .07 = ?

(a) $\frac{7}{10}$ (b) $\frac{1}{7}$ (c) $\frac{100}{7}$ (d) $\frac{7}{100}$ (e) Seven hundredths

4. Arrange (.4, .08, .001, .1) in order from the smallest to the largest.

(a) 14, .08, .1, .001 (c) .08, .001, .1, .4

(b) .001, .08, .4, .1 (d) .001, .08, .1, .4

5. **240,000 Nickels Litter Highway**

CAMP HILL, Pa. (AP) -- State police spent about nine hours Sunday night and this morning picking up an estimated 240,000 nickels from along U.S. 11 after they spilled out of a tractor trailer carrying 40,000 pounds of change.

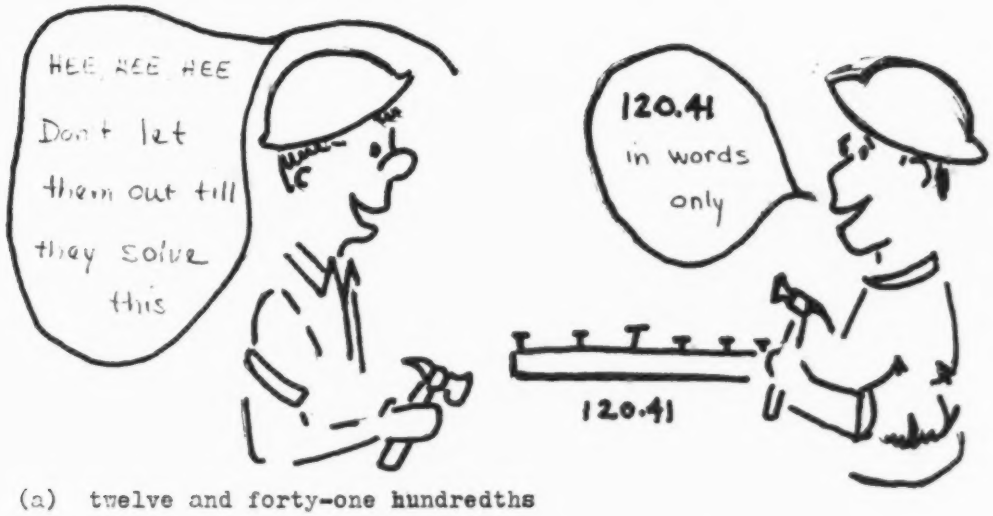
If the State Police picked up all 240,000 nickels, what was the value, in dollars, that they collected? (a nickel can be written $ .05)

(a) $120,000 (b) $12,000,000

(c) None of these

(d) $480 (e) $12,000

6.



(a) twelve and forty-one hundredths

(b) one hundred twenty and forty-one hundredths

(c) twelve thousand and forty-one

(d) one hundred twenty and forty-one tenths

(e) None of the above

7.

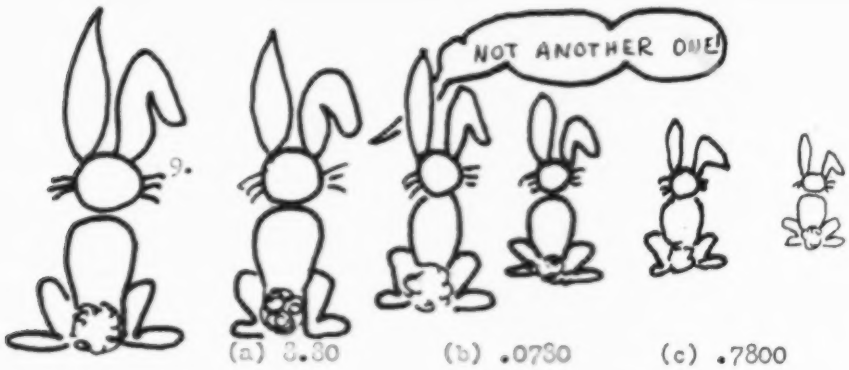
(a) .81 (b) .801 (c) .09

(d) .900 (e) None of these

8. .42 + .015 + 3.8 + ____?____

(a) 4.235 (b) None of these (c) 4,235

(d) 3,235 (e) 3.617

9. 

.65 x .12 = ?

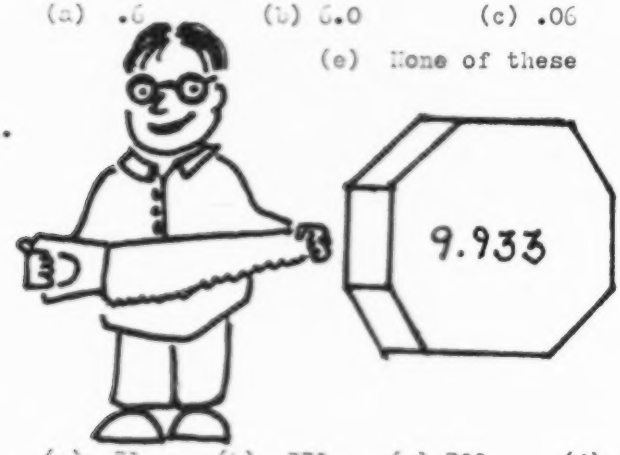
(a) 3.30 (b) .0780 (c) .7800 (d) 0.6

(e) None of these

10. .3 x .2 = ?

(a) .6 (b) 6.0 (c) .06 (d) 0.6

(e) None of these

11. 

.33 99.33 = ?

(a) 31 (b) 331 (c) 301 (d) 3.01 (e) 33.11

12. .444 .1776 = ?

(a) 4 (b) .004 (c) .04 (d) 40 (e) None of these

13. .2 .33 = ?

(a) .44 (b) .44 (c) 4.4 (d) .044 (e) None of these

14. Smarty Suzie can add the following, can YOU?

$142.16 + $8137 + $4.05

(a) $155.02 (b) $144.58

(c) $154.58 (d) $148.44

(e) None of these

How much money do you save on this special?

(a) $13.22 (b) $1.00

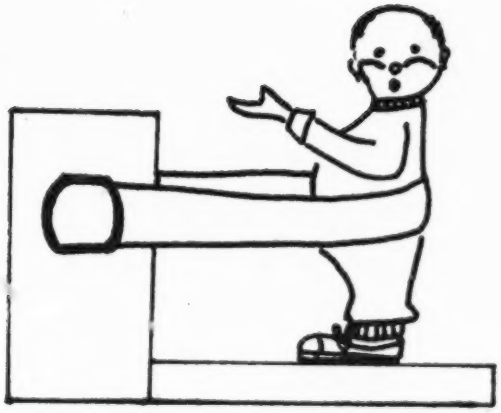
(c) $2.68 (c) $1.32

(e) None of these

16. Round .8626 off to the nearest tenth.

(a) .86 (b) .9 (c) .863

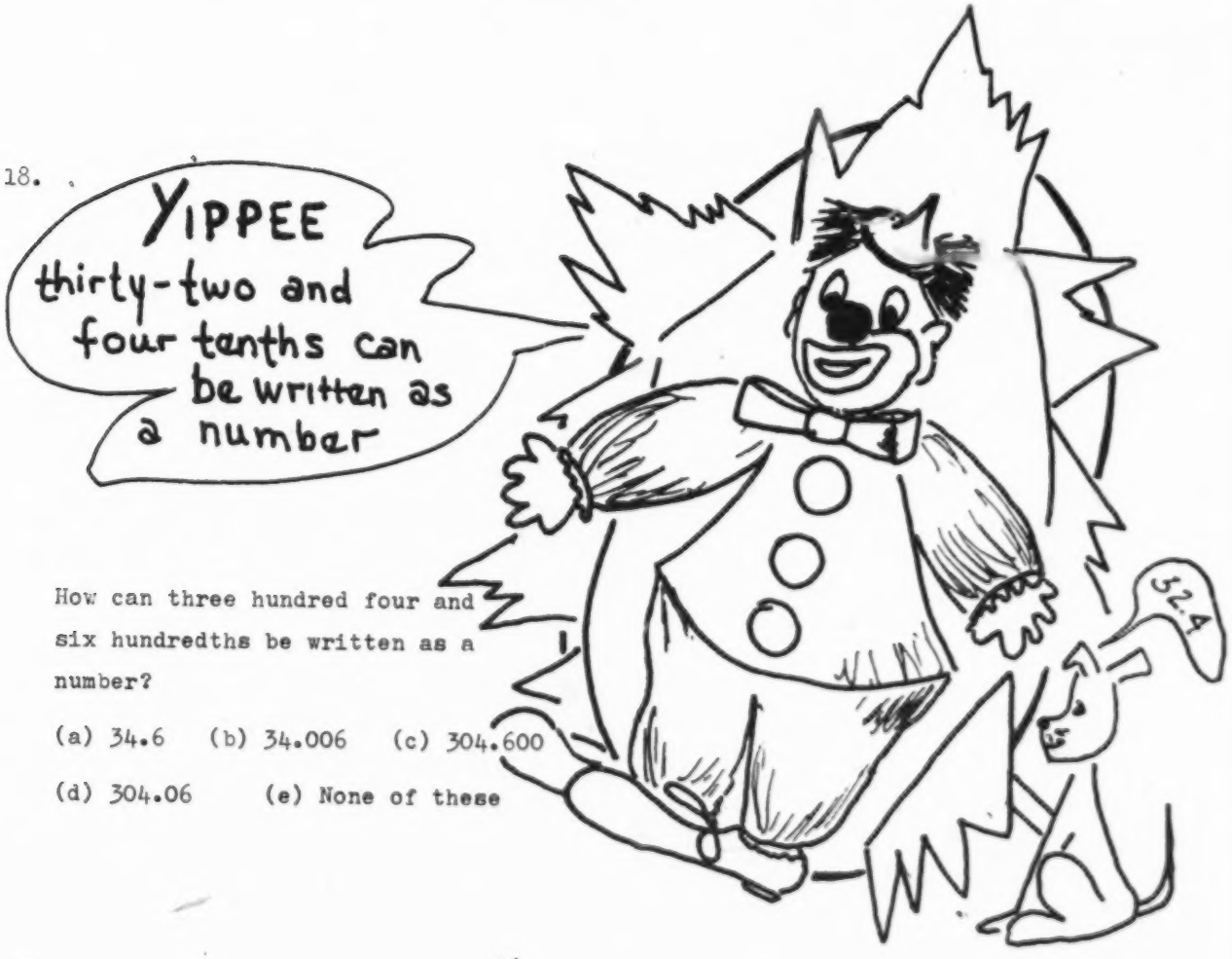
(d) .8 (e) None of these



17. Round .8626 off to the nearest thousandth.

(a) .9 (b) .86 (c) .863

(d) .862 (e) None of these

18. 

How can three hundred four and six hundredths be written as a number?

(a) 34.6 (b) 34.006 (c) 304.600

(d) 304.06 (e) None of these

DECIMAL TEST ANSWER SHEET

(The Mysterious Decimal Point)

NAME _____ SCORE _____

SCHOOL _____ DATE _____

	a	b	c	d	e
1.	0	0	0	0	0
2.	0	0	0	0	0
3.	0	0	0	0	0
4.	0	0	0	0	0
5.	0	0	0	0	0
6.	0	0	0	0	0
7.	0	0	0	0	0
8.	0	0	0	0	0
9.	0	0	0	0	0
10.	0	0	0	0	0
11.	0	0	0	0	0
12.	0	0	0	0	0
13.	0	0	0	0	0
14.	0	0	0	0	0
15.	0	0	0	0	0
16.	0	0	0	0	0
17.	0	0	0	0	0
18.	0	0	0	0	0

KEY TO DECIMAL POINT TEST

(The Mysterious Decimal Point)

1. b
2. c
3. d
4. d
5. c
6. b
7. a
8. a
9. b
10. c
11. c
12. c
13. c
14. c
15. d
16. b
17. c
18. d

ITEM ANALYSIS FOR DECIMALS TEST

(The Mysterious Decimal Point)

1. A-32,#1; A-36,#1; A-110; C-17,#1,#2; C-41; E-109

2. Same as number 1

3. Same as number 1

4. A-1,#7,#11; A-10,#1; A-28,#1,#2; A-37,#27,#28,#29; C-41; D-6; E-56; F-9; I-5; I-16

5. A-111,#3; A-114,#1-#3; A-115,#1; A-123; B-7; C-48,#1; E-21; E-56; E-111,#3,#4; G-202; I-1; I-15; K-2; K-4,#2,#3; K-10; N-1653.2

6. A-28,#1,#2; A-110,#1-#4

7. A-13,#4; A-22,#1; A-23,#1; A-26,#1; A-37,#34-#42; A-111,#1,#2; A-122; B-6; B-13; B-16; B-301; C-31; C-32; C-56; D-1; E-54,#1-#3; E-55; E-105,#1; E-111; F-9; G-402,#1-#6; H-2,#1; H-9,#1,#2; H-16,#1,#2; H-23; I-2; I-4; I-8; J-1,#1,#2; K-1; K-15; K-17; N-662; N-1653

8. Same as number 7

9. Same as number 5

10. Same as number 5

11. A-11,#4; A-124; B-301; C-48,#1,#2; C-52; E-44; E-45 E-108; E-111,#5,#6; F-1; F-21; F-25; G-202; H-10,#1-#3; H-11,#1-#5; K-201; N-667.1; N-1653.3; N-2203; N-2004

12. Same as number 11

13. Same as number 11

14. Same as number 8

15. A-13,#4; A-211; B-8; E-55; G-201; H-9,#1,#2; H-13,#1; H-19,#1-#3; H-21;#k,#2; I-206; K-201; K-205; M-662 M-1653

16. A-25,#1,#2; A-37,#19-#26; C-38; I-303,#1

17. A-22,#1; C-38; E-50

18. A-28,#1,#2; A-110,#1-#4

NAME _____
PERIOD _____

DECIMALS

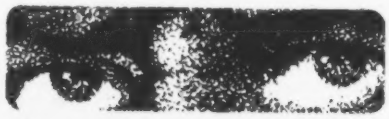
1. .6 written as a fraction is:

(a) 1/6 (b) 6/10 (c) 6/100 (d) .06/100 (e) None of these

2. Arrange (.4, .08, .001, .1) in order from the smallest to the largest.

(a) .4, .08, .1, .001
(b) .08, .001, .1, .4
(c) .001, .08, .4, .1
(d) .001, .08, .1, .4
(e) None of these

Decimals ? ??



3. .8 + .01 + _____

(a) .81 (b) .8 1 (c) .09 (d) .90 (e) None of these

4. .881 - .08 = _____

(a) .823 (b) 2.01 (c) 20.1 (d) .201 (e) None of these

5. .8626 rounded off to the nearest tenth is:

(a) .86 (b) .9 (c) .863 (d) .8 (e) None of these

6. .8626 rounded off to the nearest thousandth is:

(a) .9 (b) .86 (c) .863 (d) .862 (e) None of these

7. $.2\overline{).88}$ = _____

(a) .44 (b) 44 (c) .04 (d) 4.4 (e) None of these

8. $.33\overline{)9.933}$ = _____

(a) .301 (b) 3.01 (c) 30.1 (d) 301 (e) None of these

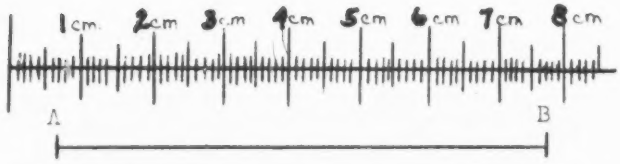
9. $.444\overline{).1776}$ = _____

(a) .4 (b) .04 (c) .004 (d) .044 (e) None of these

10. 2.3×10^2 = _____

(a) 23 (b) .230 (c) 230 (d) 2300 (e) None of these

Be Careful !

11. 

use the above rule and find the length of line segment AB to the nearest tenth of a centimeter.

(a) 5 cm (b) 6 cm (c) 7cm (d) 8 cm (e) None of these

12. .031 x .22 = _____.

(a) .682 (b) 68.2 (c) .00682 (d) .682 (e) None of these

13. 5 5.55 = _____.

(a) 1.11 (b) 11.1 (c) .111 (d) 111 (e) None of these

14. Write 2/10 as a decimal _____

(a) 2.0 (b) .2 (c) 2 (d) .02 (e) None of these

15. Write 2/3 as a decimal number, rounding off the answer to the nearest thousandth.

(a) .66 (b) 6.7 (c) .666 (d) .667 (e) None of these

ANSWER SHEET

DECIMALS WITH OBJECTIVE REFERENCES

NAME _____ GIRL _____ BOY _____
last first middle

TEACHER _____ GRADE _____

SCHOOL _____ DATE _____
mo. day yr.

		a	b	c	d	e
I-1 I-9 IV-1	1.	0	0	0	0	0
I-1 I-3 II-1 II-2	2.	0	0	0	0	0
I-5	3.	0	0	0	0	0
II-4	4.	0	0	0	0	0
I-4	5.	0	0	0	0	0
II-3	6.	0	0	0	0	0
II-6	7.	0	0	0	0	0
III-1	8.	0	0	0	0	0
IV-2	9.	0	0	0	0	0
IV-3	10.	0	0	0	0	0
I-2	11.	0	0	0	0	0
I-6 II-5	12.	0	0	0	0	0
I-7	13.	0	0	0	0	0
I-8 IV-1	14.	0	0	0	0	0
I-8 II-7 III-2 IV-1	15.	0	0	0	0	0

DECIMALS ANSWER KEY

1. b
2. d
3. a
4. d
5. b
6. c
7. d
8. c
9. a
10. c
11. c
12. c
13. a
14. b
15. d

FRACTIONS

1. $\frac{1}{4} + \frac{1}{2} =$ _____.

   (a) 1/4 (b) 2/4 (c) 3/4 (d) 2/6 (e) None of these

2. Write the fractions 1/2, 1/8, 1/4, in order from smallest to the largest.

   (a) 1/4, 1/2, 1/8 (d) 1/8, 1/2, 1/4

   (b) 1/8, 1/4, 1/2 (e) None of these

   (c) 1/2, 1/8, 1/4

3. 1 1/8 - 1/4 = _____.

   (a) 7/8 (b) 6/8 (c) 5/8 (d) 4/8 (e) None of these

4.

   $\frac{(\ )}{(\ )}$ is shaded.

   (a) 2/3 (b) 3/4 (c) 1/2 (d) 1/3 (e) None of these

5. 2/3 = ( )/6

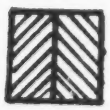
   (a) 3 (b) 1 (c) 2 (d) 4 (e) None of these

6. 3/4 - 1/4 = _____.

   (a) 3/5 (b) 2/4 (c) 1/3 (d) 3/4 (e) None of these

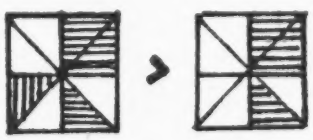
7. (1/2 + 3/4) - (1/4 + 1/4) = _____

   (a) 3/4 (b) 1/2 (c) 2/3 (d) 5/8 (e) None of these

8. 

   $\frac{(\ )}{(\ )}$ is shaded.

   (a) 2/8 (b) 2/2 (c) 3/4 (d) 1/2 (e) None of these

9. Is the shaded area of this object  than the shaded area of this object?

   (a) true

   (b) false

   (c) both

   (d) neither

10. 1 3/4 = $\frac{(\quad)}{(\quad)}$

(a) 2 1/2 (b) 7/3 (c) 7/5 (d) 7/4 (e) None of these

11. 4/5 ÷ 10/8 = _____.

(a) 7/10 (b) 1 (c) 3/5 (d) 9/12 (e) None of these

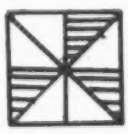
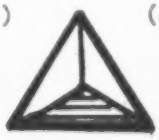
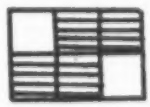
12. 2 1/3 x 1 3/4 = _____.

(a) 49/3 (b) 49/4 (c) 49/12 (d) 12/4 (e) None of these

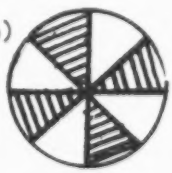
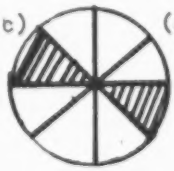
13. 1/5 + 4/5 = _____.

(a) 5/10 (b) 4/5 (c) 3/5 (d) 6/5 (e) None of these

14. Which picture shows 5/8 of the area shaded?

(a) (b)  (c)  (d)  (e) None of these

15. Rank the shaded areas of each shape in order from smallest to the largest.

(a) (b)  (c)  (d) (e) None of these

FRACTION ANSWER SHEET
WITH OBJECTIVE REFERENCES

NAME _____ KEY _____ GIRL _____ BOY _____
Last First Middle

TEACHER _____ GRADE _____

SCHOOL _____ DATE _____
mo. day yr.

		a	b	c	d	e
I-4 III-3 IV-1	1.	0	0	0	0	0
I-2 IV-2	2.	0	0	0	0	0
III-2 IV-1	3.	0	0	0	0	0
I-1 I-3 I-6 II-3 III-1, II-1	4.	0	0	0	0	0
I-1 I-6 III-1	5.	0	0	0	0	0
I-5 II-5 IV-1	6.	0	0	0	0	0
I-4 I-5 III-3 IV-1	7.	0	0	0	0	0
I-2 I-6 II-1 II-3 III-1	8.	0	0	0	0	0
I-1 I-3 II-1 II-2 II-3	9.	0	0	0	0	0
I-6 III-1	10.	0	0	0	0	0
IV-1	11.	0	0	0	0	0
III-4 IV-1	12.	0	0	0	0	0
II-4	13.	0	0	0	0	0
II-2 II-1 II-3	14.	0	0	0	0	0
II-1 II-2 II-3	15.	0	0	0	0	0

FRACTION ANSWER KEY

1. c
2. b
3. a
4. c
5. d
6. b
7. a
8. b
9. a
10. d
11. b
12. c
13. c
14. a
15. d

FRACTIONS

1. Which one of the following numbers is a factor of 54?
   (a) 3 (b) 5 (c) 7 (d) 12

2. Which of the following is a prime number?
   (a) 1 (b) 6
   (c) 7 (d) 9

3. Which number is the <u>greatest common factor</u> (GCF) of 6 and 9?
   (a) 2 (b) 3
   (c) 18 (d) 54

4. Which fraction is represented by the shaded region in figure 1?
   (a) 3/4 (b) 1/3
   (c) 1/4 (d) 4/1

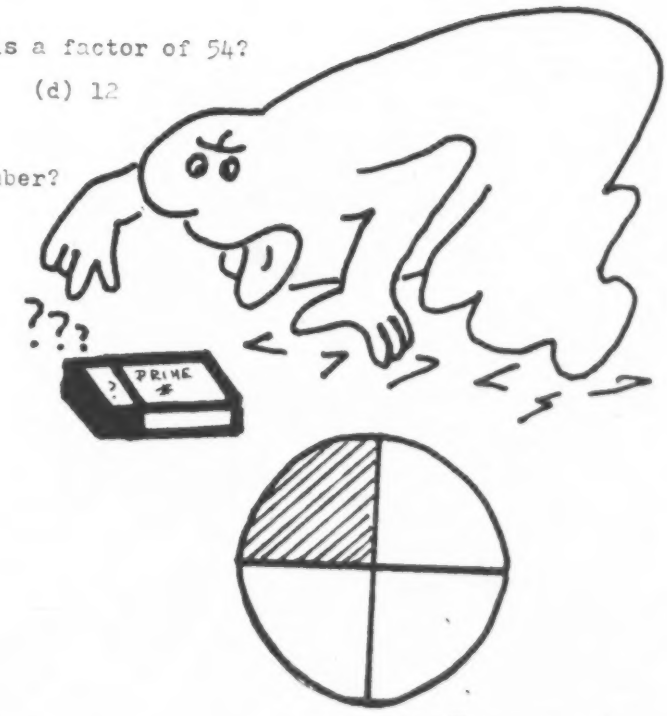


Figure 1

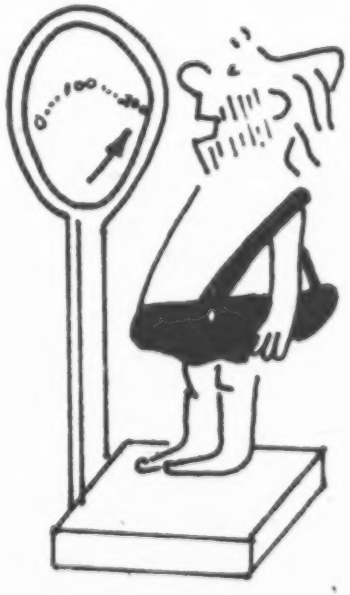
5. Which fraction below is equivalent to 2/3?
   (a) 4/8 (b) 6/9 (c) 6/4 (d) 5/15

6. Which number will not divide evenly into 510?
   (a) 3 (b) 4 (c) 5 (d) 6

7. Reduce 16/24 to lowest terms.
   (a) 1/2 (b) 2/3
   (c) 3/4 (d) 5/6

8. Find the <u>product</u>: 2/3 x 3/4
   (a) 5/7 (b) 8/9
   (c) 6/12 (d) 5/12

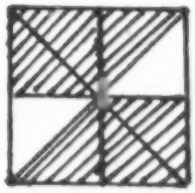
9. Find the quotient: 2/6 -- 4/9
   (a) 8/54 (b) 24/18
   (c) 6/15 (d) 18/24

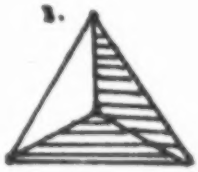


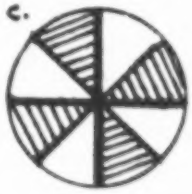
10. Find the sum: 2/3 + 1/2

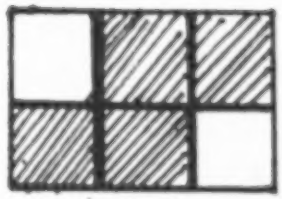
(a) 7/6 (b) 2/6 (c) 3/5 (d) 4/3

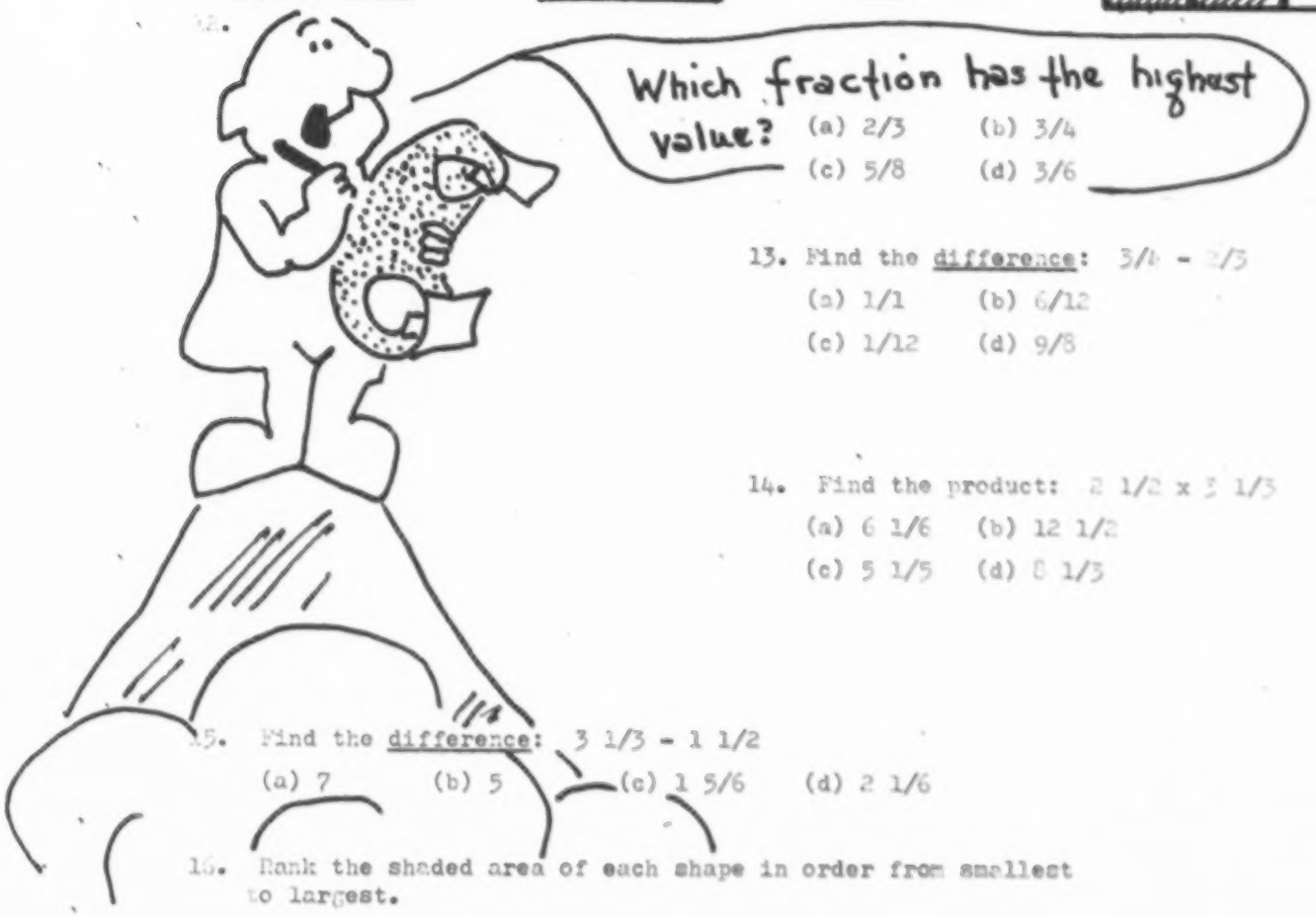
11. Which picture shows 3/4 of the area shaded?

A. 

B. 

C. 

D. 

12. 

13. Find the difference: 3/4 - 2/3

(a) 1/1 (b) 6/12

(c) 1/12 (d) 9/8

14. Find the product: 2 1/2 x 3 1/3

(a) 6 1/6 (b) 12 1/2

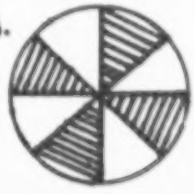
(c) 5 1/5 (d) 8 1/3

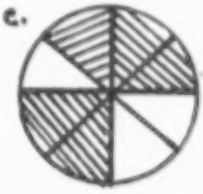
15. Find the difference: 3 1/3 - 1 1/2

(a) 7 (b) 5 (c) 1 5/6 (d) 2 1/6

16. Rank the shaded area of each shape in order from smallest to largest.

A.

B. 

C. 

D.

(a) ABCD (b) DBCA (c) CBAD (d) BCAD

FRACTIONS

PRE-TEST ANSWER SHEET

NAME _____ CLASS ____ TEST ____
Last First Middle

TEACHER _____ GRADE _____

SCHOOL _____ DATE _____
mo. day yr.

	a	b	c	d	e
1.	O	O	O	O	O
2.	O	O	O	O	O
3.	O	O	O	O	O
4.	O	O	O	O	O
5.	O	O	O	O	O
6.	O	O	O	O	O
7.	O	O	O	O	O
8.	O	O	O	O	O
9.	O	O	O	O	O
10.	O	O	O	O	O
11.	O	O	O	O	O
12.	O	O	O	O	O
13.	O	O	O	O	O
14.	O	O	O	O	O
15.	O	O	O	O	O
16.	O	O	O	O	O

FRACTIONS

PRE-TEST ANSWER KEY

1.	(a)	9.	(d)
2.	(c)	10.	(a)
3.	(b)	11.	(a)
4.	(c)	12.	(b)
5.	(b)	13.	(c)
6.	(b)	14.	(d)
7.	(b)	15.	(c)
8.	(c)	16.	(c)

FRACTION PRE-TEST
ITEM ANALYSIS

1. -147; A-149; Aftermath Series: Book 2, p. 53, p. 65, p. 66

2. A-147; E-124; Aftermath Series: Book 3, p. 66, p. 35

3. C-420; C-421

4. A-8 (#6-16); C-39; C-6

5. A-8 (#6-16); C-10; C-15; C-35; E-42; Aftermath Series: Book 2 pages 94 and 95, Book 3 pages 62 and 63, Book 4 pages 12 and 52

6. A-149; Aftermath Series: Book 2, pages 65 and 66
Book3, pages 12 and 52

7. E-125; E-126; Commercial Game "INOUT"

8. A-8 (#5, #17,18) #23 through #28; C-15 #5; I-403

9. A-8 (#5, #17 and #18, #23 through #28)

10. A-8 (#1-#4, #21, #22); A-29; C-37; E-123; Aftermath Series: Book 3, page 76, Book 4, page 95

11. A-8 (#6-16); C-39; C-6

12. A-8 (#6-16); A-27; A-33; E-122

13. A-8 (#5, #18-#20, #29-#31)

14. M-1652.1 See also Problem 8

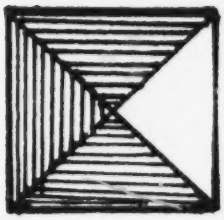
15. M-1652 See also Problem 13

16. A-8 (#6-#16); A-27; A-33

FRACTIONS
POST TEST

1. Find the sum: 3/4 + 7/8

(a) 1/2 (b) 3/4 (c) 9/10 (d) 13/8

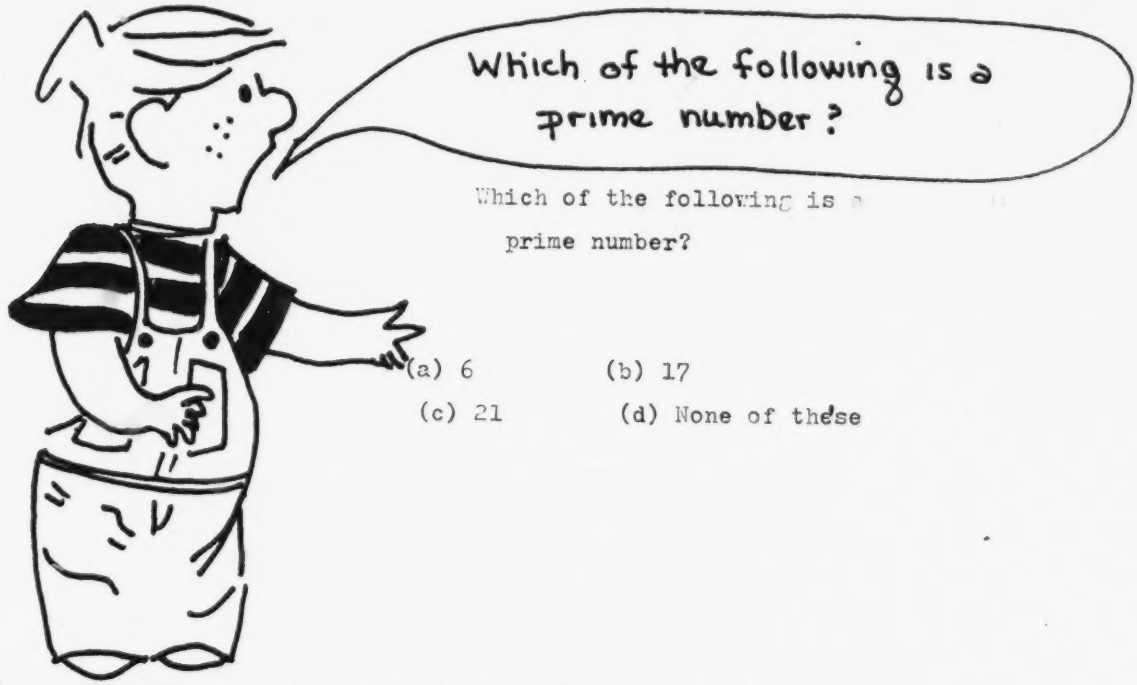
2. 

$\frac{(\quad)}{(\quad)}$ is shaded.

(a) 2/3 (b) 6
(c) 1/2 (d) 5/8

3. Which number is the greatest common factor (GCF) of 12 and 20?

(a) 2 (b) 6 (c) 12 (d) 4

4. 

Which of the following is a prime number?

(a) 6 (b) 17
(c) 21 (d) None of these

5. Which group of numbers are <u>all</u> <u>prime</u> <u>factors</u> of 150?

(a) 2,3,5 (b) 3,5,7 (c) 2,3,6 (d) 3,5,10

6.

(a) 1/16
(b) 1/4
(c) 3/8
(d) 3/16

7. Find the difference: 1 1/8 - 1/4

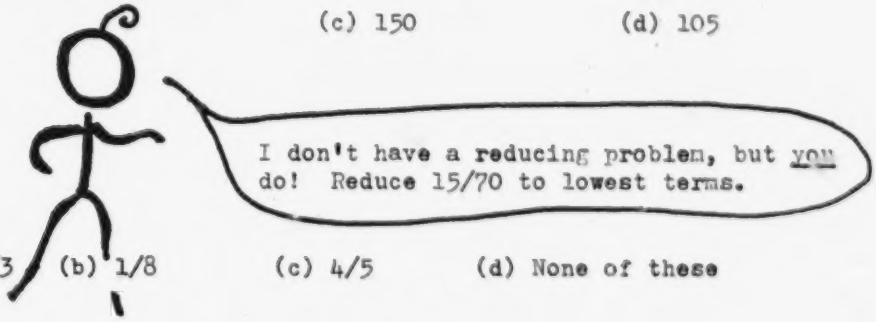
(a) 7/8 (b) 6/8 (c) 5/8 (d) None of these

8.

A plane travels 375 miles in 2 1/2 hours. How far will the plane travel in 1 hour?

(a) 88 1/2 (b) 300
(c) 150 (d) 105

9.



(a) 2/3 (b) 1/8 (c) 4/5 (d) None of these

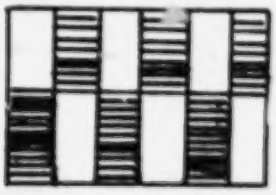
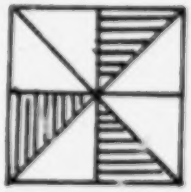
10. Find the product: 2 3/8 x 3/4 x 1 1/3

(a) 2 1/2 (b) 5/8 (c) 2 3/8 (d) 4 1/4

11. 4/5 -- 8/10 = _____

(a) 7/10 (b) 1 (c) 3/5 (d) 9/12

12. Which picture shows 2/3 of the area shaded?

13. Find the lowest common denominator (LCD) of 1/2, 1/3, 1/4, and 1/6.

(a) 10 (b) 12 (c) 20 (d) None of these

14. Rank the fractions 5/8, 5/6, 2/3 in order from smallest to largest.

(a) 5/8, 5/6, 2/3 (b) 2/3, 5/8, 5/6

(c) 2/3, 5/6, 5/8 (d) 5/8, 2/3, 5/6

15.

$\frac{(\quad)}{(\quad)}$ is shaded.

(a) 25 (b) 15 (c) 1/3 (d) 1/4

16. Find the missing number: 3/5 = ?/25

(a) 1/8 (b) 1/6 (c) 9 (d) 5

17. Add: 3 2/3 + 2 1/2

(a) 5 1/6 (b) 6 1/6 (c) 6 3/2 (d) 5 3/5

FRACTIONS
POST TEST ANSWER SHEET

NAME _____ GIRL _____ BOY _____
Last First Middle

TEACHER _____ GRADE _____

SCHOOL _____ DATE _____
mo. day yr.

	a	b	c	d	e
1.	0	0	0	0	0
2.	0	0	0	0	0
3.	0	0	0	0	0
4.	0	0	0	0	0
5.	0	0	0	0	0
6.	0	0	0	0	0
7.	0	0	0	0	0
8.	0	0	0	0	0
9.	0	0	0	0	0
10.	0	0	0	0	0
11.	0	0	0	0	0
12.	0	0	0	0	0
13.	0	0	0	0	0
14.	0	0	0	0	0
15.	0	0	0	0	0
16.	0	0	0	0	0
17.	0	0	0	0	0

FRACTIONS

POST TEST ANSWER KEY

1. (d)
2. (b)
3. (d)
4. (b)
5. (a)
6. (d)
7. (a)
8. (c)
9. (d)
10. (c)
11. (b)
12. (b)
13. (b)
14. (d)
15. (c)
16. (c)
17. (b)

FRACTION POST TEST
ITEM ANALYSIS

1. A-8; #1-4, #21, #22; A-29; C-37; E-123; Aftermath Series: Book 3 page 76, Book 4 page 95

2. A-8 (#6-16); C-39; C-6

3. G-420; G-421

4. A-147; E-124; Aftermath Series; Book 3 pages 66 and 35

5. A-147; A-149; E-124; Aftermath Series: Book 2 pages 53, 65, 66, Book 3 pages 66 and 35

6. A-8 (#5, #18-20, #29-#31; M-1652

7. A-8 (#5, #18-20, #29-#31); M-1652

8. A-8 (#5, #17 and 18, #23 through #28)

9. E-125; E-126; Commercial Game, "INOUT"

10. A-8 (#5, #17 and #18, #23-#28); C-15 #5; I-403; M-1652.1

11. A-8 (#5, #17 and #18, #23-#28)

12. A-8 (#6-16) C-39; C-6

13. G-421; A-29

14. A-8 (#6-#16); A-27; A-33

15. A-8 (#6-#16); A-27; A-33

16. A-8 (#6-16); C-10; C-15; C-35; E-42; Aftermath Series: Book 2 pages 94 and 95, Book 3 pages 62 and 63, Book 4 pages 92 and 93

17. A-8 (#1-4, #21 and 22); A-29; C-37; E-123; M-1652; Aftermath Series; Book 3 pages 76, Book 4 page 95

PRE-TEST IN PERCENT

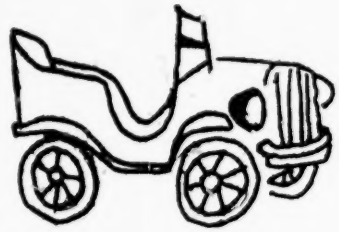
NAME: _____

PERIOD: _____

DATE: _____

Direction: Solve the following problems. Write the letter of the correct answer on the blank at the left of the problem.

_____ 1. There are thirty-five automobiles in a parking lot. Each car was made in the United States. What percent of the cars were made in the U.S.?



(a) 0% (b) 79% (c) 50% (d) 100%

_____ 2. One half of the cars in problem one are painted some shade of blue. What percent of the cars are blue?

(a) 33 1/3% (b) 50% (c) 75% (d) 100%

_____ 3. Since all of the cars in problem one were made in the U.S. what percent of the cars were made in Sweden?

(a) 110% (b) 1% (c) 25% (d) 0%

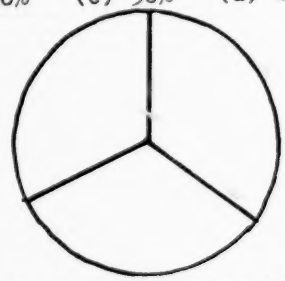
_____ 4. Estimate what percent of the following figure is shaded.

_____

_____

(a) 33 1/3 (b) 10% (c) 50% (d) 25%

_____ 5. Shade in 66 2/3% of this figure.



Directions: Solve the following problems and write the answer on the blank at the left of the questions.

_____ 6. Write the decimal equivalent of $\frac{1}{2}$.

_____ 7. Write the decimal equivalent of 1/3.

_____ 8. Write the percent equivalent of .25.

_____ 9. Write the percent equivalent of .95.

_____10. True or false: The percent equivalent of .05 is 50%.

_____11. True or false: The percent equivalent of 1 is 100%.

Directions: 12-20 Solve the following problems. Then match the problem with the correct answer found in the answer column. Place the letter of the answer on the blank before the problem.

_____12. What number is 25% of 20

_____13. 35.2 is ___?___ % of 88.

_____14. 23 is 50% of ___?___.

_____15. What number is 10% of 45.

_____16. 15 is ___?___ % of 75.

_____17. 9.6 is 15% of ___?___.

_____18. 1 is ___?___ % of 1

_____19. 6 is 66 2/3% of ___?___.

_____20. What number is 33 1/3 of 90.

POSSIBLE ANSWERS

A. 5
B. 20
C. 30
D. 45
E. 40
F. 100
G. 64
H. 4.5
I. 50
J. 46
K. 9

Directions: Solve the following problems. Write the letter of the correct answer on the blank at the left of the problem.

T.W. COOL NITE SLEEPING BAG
(5lb.) 14 only 34.00 $29

_____ 21. The percent decrease in price for this sleeping bag is: (A) 147% (B) 14 13/17% (C) 85 5/17% (D) 17 7/29%

4 CYCLE AUTO. WASHER,
Avocado only. 2 only 254.95 $228

_____ 22. The percent decrease in price for this automatic washer is: (A) 10.5% (B) 89.4% (C) 11.8% (D) 105%

Bill Raises
Judges' Pay
by $1,500

_____ 23. The state legislature passed a bill giving district judges a pay raise of $1500.00 bringing their salary up to $30,500.00 a year from $29,000.00. This represents what percent increase in salary?

(A) 92.6% (B) 75% (C) 7.8% (D) 7.5%

50%
OFF SECOND TIRE!

[illegible]

[illegible]-TEST ANSWER SHEET

[illegible] _____

[illegible] _____

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____

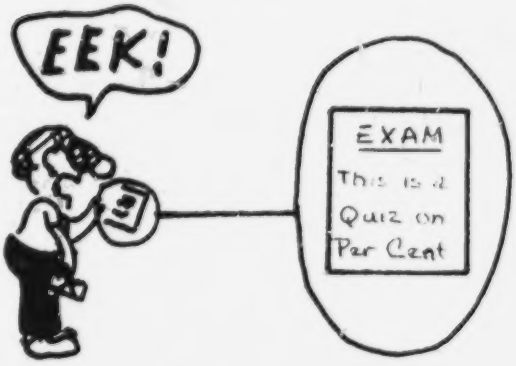
PERCENT POST TEST

NAME _____

DATE _____

PERIOD _____

Directions: Solve the following problems. Write the letter of the correct answer on the blank to the left of the question.



_____1. If a student answers 83 out of a 100 questions correctly, his percent score would be:

a) 830% b) .83%

c) 8.9% d) 83%

_____2. A math class of 22 students contains 11 girls. What percent of the class is girls?

a) 22% b) 50% c) 11% d) 75%

_____3. One day in a certain math class all the students either left their homework in their locker, forgot it at home, lost it or did not do it. What percent of the class had their homework ready to be turned in?

a) 100% b) 10% c) 90% d) 0%

_____4. Estimate what percent of the following figure is shaded.

a) 75% b) 25% c) 100% d) 50%

_____5. Shade in 75% of this figure.

_____ 6. Write the decimal equivalent of 1/8.

_____ 7. Write the decimal equivalent of 1/10.

_____ 8. Write the percent equivalent of .56.

_____ 9. Write the percent equivalent of .3.

_____10. True or false: The percent equivalent of 1/5 is 50%.

_____11. True or false: The percent equivalent of 2 is 200%.

12-20 Directions: Solve the following problems. Match the problem with the correct answer found in the answer column. Place the letter of the answer on the blank to the left of the problem.

_____12. What number is 40% of 85?

_____13. 27 is ___? of 270.

_____14. 38 is 75% of what number?

_____15. What number is 66% of 125?

_____16. 39 is ___% of 100.

_____17. 30 is 50% of what number?

_____18. 75 is ___% of 300.

_____19. 15 is 33 1/3% of what number?

_____20. What number is 25% of $76.00?

POSSIBLE ANSWERS

A. 34

B. 39

C. $19.00

D. 506

E. 10

F. 25

G. 60

H. 82.5

I. $190.00

J. 50.7

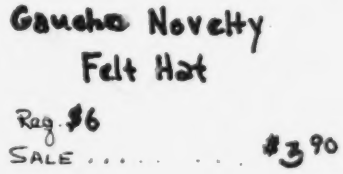
K. 45

Directions: Solve the following problems. Place the letter of the correct answer on the blank to the left of the problem.

_____21. Buying a hat on sale will give you a savings of what percent?

a) 53.8% b) 35%

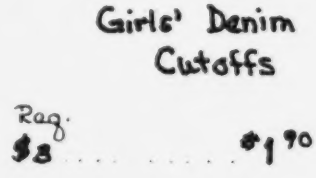
c) 285.7% d) 10%



_____22. The price of these cut offs has been reduced by what percent?

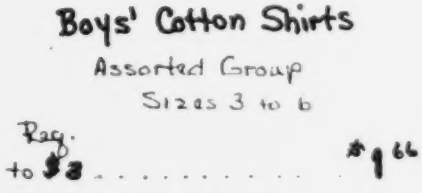
a) 10% b) 52%

c) 272.7% d) 36 2/3%



_____23. The price of these shirts has been reduced by what percent?

a) 25% b) 55 1/3% c) 44 2/3% d) 16.6%



_____24. The Gordons saved $700.00 of their $8400.00 annual income. What percent of their income did they save?

a) 8.3% b) 83% c) 1200% d) 12%

_____25. A storekeeper priced a radio set at 125% of the price he paid for it. He paid $84.00 for the set. What price did he plan to charge for the set?

a) $67.20 b) $100.00 c) $105.00 d) $10.50

PERCENT

PRE-TEST ANSWER SHEET

NAME_____

SCORE_____

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____
25. _____

PERCENT PRETEST AND POST TEST KEY AND ACTIVITY ANALYSIS

PRE-TEST ANSWERS	POST TEST ANSWERS	RELATED ACTIVITIES
1. D	1. D	A-40 #1,2; C-34; C-47; E-110
2. B	2. B	
3. D	3. D	
4. D	4. D	A-40 #13, A-40 #28; A-40 #35;C-19;
5. [illegible]	5. [illegible]	D-40
6. .5	6. .125	B-9 #1; E-4; E-5; A-116
7. .333	7. .1	
8. 25%	8. 56%	A-40 #15-19; A-40 #20; C-47; E-4
9. 95%	9. 33 1/3%	E-5; E-114; A-117
10. False	10. False	B-9 #2; E-4; E-5; E-41; A-40 #30-33
11. True	11. True	A-119; E-116
12. A	12. A	A-4; A-40 #4; A-133; A-40 #22-27;
13. E	13. E	A-40 #34,36; E-118; E-115; C-44; C-25
14. J	14. J	F-28 #2; H-5; K-14; E-119
15. H	15. H	Related Material: A-426; C-11 #8
16. B	16. B	E-15; G-409,-11; H-11 #2,4; H-13 #1;
17. G	17. G	J-203
18. F	18. F	B-17; F-28 #1; D-2; D-15; D-18; D-20
19. K	19. K	K-13 #1; A-118; G-105; N-667.2; N-2005
20. C	20. C	N-2007; N-2007.5; G-205
21. B	21. B	B-14; N-1654.2; N-2006.6; A-14; A-208; A-412; A-413
22. A	22. D	A-146; I-201 #1,2
23. C	23. C	K-301 I-209 G-206 #1,#4
	24. A	See questions 12-20 Above
	25. C	

ARITHMETIC COMPUTATION

Directions: Work the example in each box. Then look at the possible answers at the right side of the box and see if your answer is given. It is is, fill in the space on your answer sheet which which has the same letter as the answer you have chosen. If your answer is <u>not</u> given, fill in the space which has the same letter as the letter beside the NG (which means "not given"). Use a separate sheet of paper for figuring.

SAMPLE A:

$$\begin{array}{r} 32 \\ +\ 14 \\ \hline \end{array}$$

a. 14
b. 16
c. 46
d. 50
e. NG

a	b	c	d	e
O	O	O	O	O

1. $45 \overline{)\ 13770}$

a. 36
b. 305 35/43
c. 306
d. 306 5/45
e. NG

2. $\begin{array}{r} 151603 \\ -\ 93864 \\ \hline \end{array}$

f. 57,729
g. 57,739
h. 57,639
i. 56,739
j. NG

3. $67 \overline{)\ 6566}$

a. 87
b. 57 57/67
c. 88
d. 88 7/67
e. NG

4. $\begin{array}{r} 1\ 1/2 \\ +2\ 7/8 \\ \hline \end{array}$

f. 3 3/8
g. 4 1/8
h. 4 3/8
i. 4 1/2
j. NG

5. $3 \overline{)\ 9.111}$

a. 3.037
b. 3.37
c. 337
d. 3037
e. NG

6. $\begin{array}{r} 708 \\ \times\ 649 \\ \hline \end{array}$

f. 459,492
g. 458,492
h. 459,392
i. 459,482
j. NG

7. $\begin{array}{r} 139146 \\ -\ 93459 \\ \hline \end{array}$

a. 34,687
b. 45,687
c. 45,697
d. 46,687
e. NG

8. $6 \overline{)\ 301.92}$

f. .542
g. 5.42
h. 50.42
i. 5042
j. NG

9. $7/10 - 1/5$

a. 1/2
b. 1/5
c. 2/5
d. 1 1/2
e. NG

10. $1\ 1/3 \times 1\ 1/2$

f. 1
g. 2
h. 3
i. 4
j. NG

11. $\begin{array}{r} 6468 \\ 5889 \\ 3996 \\ +\ 9779 \\ \hline \end{array}$

a. 25,132
b. 26,032
c. 26,122
d. 26,132
e. NG

12. $1\ 1/5 \div 3/10$

f. 1/4
g. 9/25
h. 4
i. 2
j. NG

13. Round to tenths:

2.17 + 31.2 =

a. 33.4
b. .519
c. 33.3
d. 51.9
e. NG

14.
$$\begin{array}{r} 2/3 \\ +\ 2\ 4/5 \\ \hline \end{array}$$

f. 2 7/15
g. 3
h. 3 1/3
i. 3 2/3
j. NG

15. Round to 3 digits:

$$\begin{array}{r} 62.4 \\ \times\ 5.00 \\ \hline \end{array}$$

a. 312
b. 3.12
c. 31.2
d. 310
e. NG

16.
$$\begin{array}{r} 649 \\ \times\ 780 \\ \hline \end{array}$$

f. 49,622
g. 50,622
h. 505,220
i. 506,220
j. NG

17.
$$\begin{array}{r} 4569 \\ 8897 \\ 4978 \\ +\ 7789 \\ \hline \end{array}$$

a. 25,233
b. 26,133
c. 26,223
d. 26,233
e. NG

18.
$$\begin{array}{r} 4798 \\ \times\ 97 \\ \hline \end{array}$$

f. 464,406
g. 465,306
h. 465,396
i. 465,406
j. NG

19.
$$\begin{array}{r} 3\ 1/4 \\ -\ 1\ 4/5 \\ \hline \end{array}$$

a. 2 3/5
b. 1 9/20
c. 1 11/20
d. 2 9/20
e. NG

20. What is 4% of $12?

f. $.48
g. $.30
h. $3.00
i. $4.80
j. NG

21.
$$\begin{array}{r} 12 \\ \times\ 9\ 2/3 \\ \hline \end{array}$$

a. 106
b. 108 2/3
c. 114
d. 116
e. NG

22. If $\frac{K}{2} = 12$, then K =

f. 6
g. 14
h. 24/2
i. 24
j. NG

23. Round to 3 digits:

$$\begin{array}{r} 41.0 \\ \times\ 3.23 \\ \hline \end{array}$$

a. 1.32
b. 13.2
c. 132
d. 133
e. NG

24. What is 4 1/2% of $20.00?

f. $.85
g. $.90
h. $8.50
i. $9.00
j. NG

25. $58\overline{)3910.36}$

a. 6.74
b. 67.41
c. 6742
d. 67.42
e. NG

26. $50 is 10% of what amount?

f. $5.00
g. $20.00
h. $500.00
i. $5000.00
j. NG

27. $4.8\overline{)40.80}$

a. .85
b. 8.5
c. 85
d. 850
e. NG

28. $\frac{6}{9} = \frac{N}{27}$

N =

f. 3
g. 4
h. 18
i. 6
j. NG

29. $12 \div 16 =$

a. 2/3
b. 3/4
c. 1 1/3
d. 12
e. NG

30. $\frac{12}{48} = \frac{9}{N}$

$N =$

f. 18
g. 27
h. 32
i. 108
j. NG

31. $\frac{2b}{3} = 4$

$b =$

a. 2
b. 12
c. 6
d. 24
e. NG

32. \$50 is what per cent of \$1000?

f. .5
g. 2
h. 5
i. 20
j. NG

33. \$150 is 75% of what amount?

a. \$11.25
b. \$2000.00
c. \$112.50
d. \$200.00
e. NG

34. $\begin{array}{r} (-2) \\ \times\ 4 \\ \hline \end{array}$

f. 2
g. 6
h. 8
i. -8
j. NG

35. 75 is what per cent of \$1500?

a. 5
b. 9
c. 10 1/2
d. 50
e. NG

36. $\frac{N}{5} = \frac{12}{50}$

$N =$

f. 1.2
g. 2/5
h. 10
i. 25
j. NG

37. $6 + (-2) =$

a. 3
b. 4
c. 8
d. 24
e. NG

38. $3N + 4 = 5N$

$N =$

f. 1
g. 2
h. 1/3
i. 35
j. NG

39. $\frac{-20}{5} =$

a. -15
b. 4
c. 16
d. -4
e. NG

40. $4r + 2 = 62 - r$

$r =$

f. 12
g. 15 1/2
h. 16
i. 20
j. NG

41. $\frac{2^2 \times 2}{4^2} =$

a. 1/2
b. 1
c. 1 1/2
d. 2
e. NG

NAME _____ GIRL _____ BOY _____
Last First Middle

TEACHER _____ GRADE _____

SCHOOL _____ DATE _____
mo. day yr.

	a	b	c	d	e
1.	0	0	0	0	0
2.	f	g	h	i	j
	0	0	0	0	0
3.	a	b	c	d	e
	0	0	0	0	0
4.	f	g	h	i	j
	0	0	0	0	0
5.	a	b	c	d	e
	0	0	0	0	0
6.	f	g	h	i	j
	0	0	0	0	0
7.	a	b	c	d	e
	0	0	0	0	0
8.	f	g	h	i	j
	0	0	0	0	0
9.	a	b	c	d	e
	0	0	0	0	0
10.	f	g	h	i	j
	0	0	0	0	0
11.	a	b	c	d	e
	0	0	0	0	0
12.	f	g	h	i	j
	0	0	0	0	0
13.	a	b	c	d	e
	0	0	0	0	0
14.	f	g	h	i	j
	0	0	0	0	0
15.	a	b	c	d	e
	0	0	0	0	0
16.	f	g	h	i	j
	0	0	0	0	0
17.	a	b	c	d	e
	0	0	0	0	0
18.	f	g	h	i	j
	0	0	0	0	0
19.	a	b	c	d	e
	0	0	0	0	0
20.	f	g	h	i	j
	0	0	0	0	0
21.	a	b	c	d	e
	0	0	0	0	0
22.	f	g	h	i	j
	0	0	0	0	0
23.	a	b	c	d	e
	0	0	0	0	0
24.	f	g	h	i	j
	0	0	0	0	0
25.	a	b	c	d	e
	0	0	0	0	0
26.	f	g	h	i	j
	0	0	0	0	0
27.	a	b	c	d	e
	0	0	0	0	0
28.	f	g	h	i	j
	0	0	0	0	0
29.	a	b	c	d	e
	0	0	0	0	0
30.	f	g	h	i	j
	0	0	0	0	0
31.	a	b	c	d	e
	0	0	0	0	0
32.	f	g	h	i	j
	0	0	0	0	0
33.	a	b	c	d	e
	0	0	0	0	0
34.	f	g	h	i	j
	0	0	0	0	0
35.	a	b	c	d	e
	0	0	0	0	0
36.	f	g	h	i	j
	0	0	0	0	0
37.	a	b	c	d	e
	0	0	0	0	0
38.	f	g	h	i	j
	0	0	0	0	0
39.	a	b	c	d	e
	0	0	0	0	0
40.	f	g	h	i	j
	0	0	0	0	0
41.	a	b	c	d	e
	0	0	0	0	0

ARITHMETIC Concepts

Directions: Read each question. Decide which of the answers given below is correct. Look at the answer sheet. Fill in the space which has the same letter as the answer you have chosen.

SAMPLE A: A dime is worth how many cents?

a. 2
b. 5
c. 10
d. 25

a	b	c	d	e
O	O	O	O	O

1. 6 is what part of 10?

   a. 1/6
   b. 1/10
   c. 3/5
   d. 2/5

2. What is 2.504 rounded to hundredths?

   a. 2.5
   b. 2.50
   c. 2.51
   d. 2.505

3. What does XIV mean?

   a. 104
   b. 16
   c. 14
   d. 115

4. _____ + 4 ≠ 6
   What pair of numbers, if put in the blank, would make this sentence true?

   a. 10 ÷ 10
   b. 30 + 2
   c. 8 x 3
   d. 4 x 3

5. A number is evenly divisible (no remainder) by 9. You can be sure that it is also evenly divisible by --

   a. 2
   b. 3
   c. 4
   d. 18

6. What is the smallest common denominator for 4/5, 3/4 and 2/3?

   a. 3
   b. 5
   c. 12
   d. 60

7. In which of the following numbers has 7 the greatest value?

   a. 74.00
   b. 137.46
   c. 1.74
   d. 9.97

8. What is 2.94 rounded to the nearest tenth?

   a. 2.90
   b. 2.9
   c. 2.95
   d. 3.0

9. By estimation, choose the example which will have the smallest quotient.

   a. 22 600
   b. 21 1200
   c. 21 600
   d. 21 1190

10. 4 x 125 =

    a. (4x5) + (4x2) + (4x1)
    b. (4x12) + (4x5)
    c. (4x120) + 5
    d. (4 x 100) + (4x25)

11. 9 is what per cent of 15?

    a. 6
    b. 135
    c. 60
    d. 13.5

12. The perimeter of a square is found by using the formula:

a. s^2
b. $1/2s^2$
c. 1/2bh
d. 4s

13. If N divided by 7 is more than 6, then N may be:

a. 20
b. 30
c. 40
d. 50

14. Two fifths of what number is 6?

a. 2 2/5
b. 10
c. 15
d. 30

15. Which would tell you that a number is evenly divisible by 5?

a. the last digit
b. the number is even
c. the number is odd
d. the sume of the digits

16. You know that A + B + C = 100. You know that D is greater than A. Then you know that:

a. D+B+C is greater than 100
b. A+D+B is greater than 100
c. B+B+C = 100
d. D+B+C is less than 100

17. 2500 is equal to:

a. 5
b. 50
c. 500
d. 5000

18. 4^3 equals:

a. 7
b. 12
c. 16
d. 64

19. What is the sum of (-8)+(+4)?

a. +4
b. -4
c. +12
d. -10

20. How many hours pass from 9:45 A.M. to 1:15 P.M.?

a. 2 1/2
b. 3 1/4
c. 3 1/2
d. 3 3/4

21. What is the value of N in $\frac{20}{60} = \frac{50}{N}$?

22. Which number comes next in this set?

a. 22
b. 21
c. 20
d. 19

23. In which of these will the product be less than N?

a. 1 x N
b. 1 1/4 x N
c. 3/2 x N
d. 3/4 x N

24. 60% of 2150 is nearest:

a. 1300
b. 1500
c. 1200
d. 120

25. Without multiplying, find the difference between 78 x 165 and 79 x 165.

a. 1
b. 78
c. 79
d. 165

26. 0.24 x 498 is approximately:

a. 1200
b. 2200
c. 120
d. 220

27. In the example 16/8 = 2, the 8 is the:

a. numerator
b. multiplier
c. quotient
d. divisor

28. If 8 times N+4 is less than 50, you can be sure that 8 times N is:

a. less than 40
b. less than 46
c. more than 48
d. more than 40

29. By the commutative property of numbers, we know that:

a. a+b = b ÷ a
b. axb = b ÷ a
c. a+b = b+a
d. a-b = b-a

30. The product of any number (N) multiplied by 25 is equivalent to:

a. 100xN, divided by 4
b. 20 times N, plus 5
c. N divided by 100, multiplied by 4
d. 20 times N, multiplied by 5

31. Which fraction is expressed in lowest terms?

a. 42/421
b. 287/427
c. 162/261
d. 88/354

32. Which of these is the best estimate of 0.243 ÷ 1.944?

a. .0125
b. 0.125
c. 1.25
b. 12.5

(Use these sets for Items 33 and 34)

Set W: Ohio, Oregon, Oklahoma
Set X: Iowa, Ohio, Illinois
Set Y: Oregon, Idaho, Iowa
Set Z: Texas, Oklahoma, Idaho

33. The union of all sets has how many (different) states?

a. 2
b. 3
c. 11
d. 7

34. Which of these two sets are disjoint (have no common members)?

a. X and Z
b. W and X
c. W and Y
d. Y and X

---

35. If the circumference of a circle is $2\pi r$, how do you find the radius (r) when you know the circumference (c)?

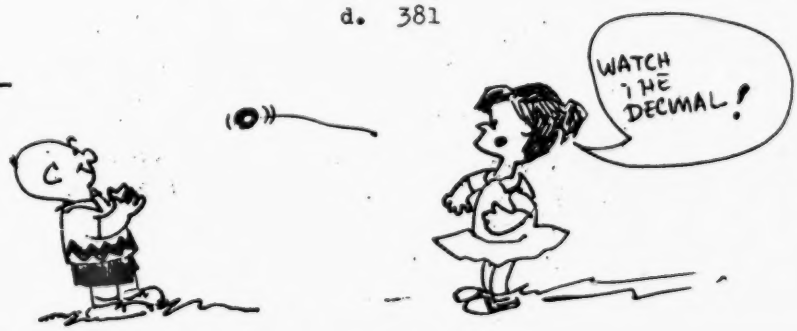
a. c/π
b. $c/2r$
c. $c/2$
d. $/2r$

36. By the distributive property of numbers, we know that (A x B) + (A x C) =

a. 2A + B + C
b. 2A x B x C
c. A x (B +C)
d. 2A + (BxC)

37. Which of these is a prime number?

a. 158
b. 113
c. 121
d. 381



38. A city has 16,000 people when counted by use of the decimal system. If counted in a base of 8, instead of a base of 10, which might be the population of the city?

a. 7500_{eight}
b. $37,200_{eight}$
c. 3720_{eight}
d. 5000_{eight}

39. What is the cub root of $(K^2 \times K)$?

a. K
b. K^2
c. K^3
d. K^9

40. How many x's are there below if counted in a base of five instead of a base of ten?

x x x x x x x x x x x x x

a. 13_{five}
b. 23_{five}
c. 20_{five}
d. 103_{five}

NAME _____ GIRL ____ BOY ____
Last First Middle

TEACHER _____ GRADE _____

SCHOOL _____ DATE _____
mo. day yr.

1.	a	b	c	d	e	17.	a	b	c	d	e	33.	a	b	c	d	e
	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0
	a	b	c	d	e		a	b	c	d	e		a	b	c	d	e
2.	0	0	0	0	0	18.	0	0	0	0	0	34.	0	0	0	0	0
	a	b	c	d	e		a	b	c	d	e		a	b	c	d	e
3.	0	0	0	0	0	19.	0	0	0	0	0	35.	0	0	0	0	0
	a	b	c	d	e		a	b	c	d	e		a	b	c	d	e
4.	0	0	0	0	0	20.	0	0	0	0	0	36.	0	0	0	0	0
	a	b	c	d	e		a	b	c	d	e		a	b	c	d	e
5.	0	0	0	0	0	21.	0	0	0	0	0	37.	0	0	0	0	0
	a	b	c	d	e		a	b	c	d	e		a	b	c	d	e
6.	0	0	0	0	0	22.	0	0	0	0	0	38.	0	0	0	0	0
7.	a	b	c	d	e		a	b	c	d	e		a	b	c	d	e
	0	0	0	0	0	23.	0	0	0	0	0	39.	0	0	0	0	0
	a	b	c	d	e		a	b	c	d	e		a	b	c	d	e
8.	0	0	0	0	0	24.	0	0	0	0	0	40.	0	0	0	0	0
	a	b	c	d	e		a	b	c	d	e						
9.	0	0	0	0	0	25.	0	0	0	0	0						
	a	b	c	d	e		a	b	c	d	e						
10.	0	0	0	0	0	26.	0	0	0	0	0						
	a	b	c	d	e	27.	a	b	c	d	e						
11.	0	0	0	0	0		0	0	0	0	0						
	a	b	c	d	e		a	b	c	d	e						
12.	0	0	0	0	0	28.	0	0	0	0	0						
	a	b	c	d	e		a	b	c	d	e						
13.	0	0	0	0	0	29.	0	0	0	0	0						
	a	b	c	d	e	30.	a	b	c	d	e						
14.	0	0	0	0	0		0	0	0	0	0						
	a	b	c	d	e		a	b	c	d	e						
15.	0	0	0	0	0	31.	0	0	0	0	0						
	a	b	c	d	e		a	b	c	d	e						
16.	0	0	0	0	0	32.	0	0	0	0	0						

ARITHMETIC APPLICATIONS

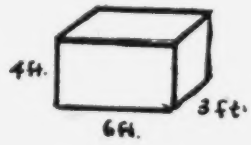
Directions: Work each problem. Then look at the possible answers under the problem and see if your answer is given. If it is, fill in the answer space on your answer sheet which has the same letter as the answer you have chosen. If your answer is not given, fill in the space which has the same letter as the letter beside NG. If NG is not listed for an example, one of the given answers is the correct answer. There is no sales tax in any problem on the test unless you are told otherwise. Use a separate sheet of paper for all figuring.

1. How many flashlight batteries can you buy for $1.00 if they sell at 2 for 25¢?

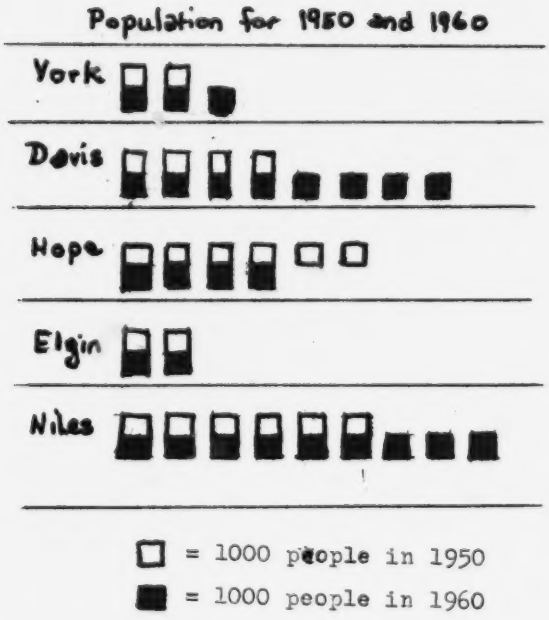
   a. 8
   b. 4
   c. 10
   d. 12
   e. NG

2. The box in Figure A contains how many cubic feet?

Figure A



   a. 24
   b. 26
   c. 36
   d. 72
   e. NG



3. Which city doubled its population between 1950 and 1960?

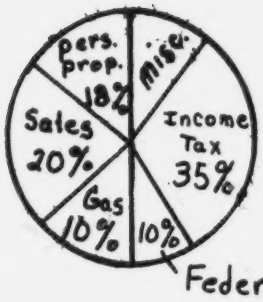
   a. York
   b. Davis
   c. Elgin
   d. Niles
   e. None

4. How many more people were there in these 5 cities in 1960 than in 1950?

   a. 6
   b. 26
   c. 5000
   d. 60,000
   e. NG

5. Which city had approximately half as many people as Davis in 1960?

   a. Hope
   b. York
   c. Elgin
   d. Niles
   e. None



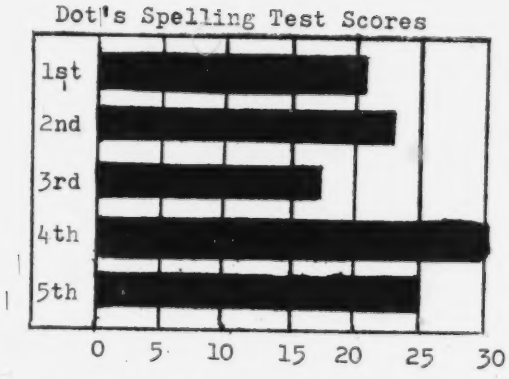
Mr. Brown's Tax Dollar

6. What per cent of Mr. Brown's tax dollar is spent on miscellaneous taxes?

   a. 7
   b. 9
   c. 10
   d. 15
   e. NG

7. If Mr. Brown spends $80 a month on these taxes, how much of it is spent on sales tax?

   a. $1.60
   b. $4.00
   c. $16.00
   d. $40.00
   e. NG



Number of Words Right on 30 Word Spelling Tests

8. How many spelling words did Dot miss the last 2 weeks?

   a. 5
   b. 1
   c. 10
   d. 55
   e. NG

9. Which week did Dot score 23?

   a. 1st
   b. 4th
   c. 3rd
   d. 2nd
   e. NG

10. How many words better was she for the 4th week than for the 3rd week?

   a. 3
   b. 10
   c. 15
   d. 22
   e. NG

(A family went camping. Items 11-16 are some of their problems)

11. They left at 6:45 A.M. to travel north. What time was it 8 1/2 hours later?

   a. 2:15 PM
   b. 2:45 PM
   c. 3:15 PM
   d. 3:45 PM
   e. NG

12. The scale of the park map reads, "1 1/2 inch = 1 mile." How far will a distance of 6 inches be?

a. 1 mile
b. 4 miles
c. 6 miles
d. 9 miles
e. More information is needed.

13. At the camp store, beans were 2 cans for 41¢. What would 6 cans cost at that rate?

a. 20 1/2¢
b. 82¢
c. $1.22
d. $2.46
e. NG

14. They bought gasoline twice. On one tank of 12 gallons they went 216 miles. What was the average number of miles per gallon on this tank?

a. 12
b. 16
c. 18
d. 20
e. More information is needed.

15. At 12 o'clock they had goon 1/3 the way. How many miles must they go?

a. 4
b. 15
c. 36
d. 12
e. More information is needed.

16. Which solution should you use to find the rate (R) they traveled per hour if you know the time (T) and distance (D)?

a. T/D
b. D x T
c. $\frac{T \times D}{R}$
d. D/T
e. TR/D

Look !!! Carefully !!!

---

17. What is the circumference of the circle in figure B? (Use $\pi = 3\ 1/7$)

a. 22 in.
b. 44 in.
c. 88 in.
d. 154 in
e. NG

Figure B

18. A map scale reads, "1 inch = 3 miles." Linda finds that two points on the map are 1 ft. 3 in. apart. How many miles is that?

a. 9
b. 15
c. 39
d. 45
e. NG

19. In buying a rug for a bedroom, most people would buy one that is:

a. 9'x 12'
b. 16' x 22'
c. 12' x 24'
d. 15' x 18'
e. 14" x 20"

(Mrs. White wonders how much she can save at a frozen food sale. Items 20-22 are some of her problems.)

20. Frozen peas usually cost 19¢ a package. They are on sale at 6 packages for 89¢. How much will she shave if she buys 2 dozen-packages at the sale price?

a. 89¢
b. $1.00
c. $1.20
d. $3.56
e. NG

21. She can buy one half of a beef at 79¢ a pound. This half weighs 336 pounds. It will last the Whites 158 days. To find the average daily cost you would do which of these?

a. multiply pounds by days; then divide by cost per pound
b. multiply cost per pound by days; then divide by pounds
c. subtract days times cost per pound from pounds
d. multiply cost per pound by total pounds; then divide by days
e. NG

22. Mrs White spends an average of $1.82 per day for beef. If she buys the been in Item 21 above, how much will she save each day on the average?

a. 4¢
b. 14¢
c. 26¢
d. $1.68
e. NG

(Mr. Dixby owns a store. Items 23-25 are some of his problems.)

23. A radio cost him $40. He sells it for $50. What per cent of the selling price does he have for expenses?

a. 1/5
b. 10
c. 20
d. 25
e. NG

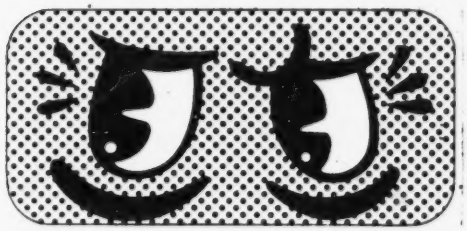
24. What commission does a salesman receive for selling a stove at $250? His commission is 10 per cent on the first $200 of a sale and 15 per cent on the balance.

a. $7.50
b. $25.00
c. $27.50
d. $95.00
e. NG

25. A TV set was marked at $200. It is now marked at $150. What per cent off is this?

a. 1/4 b. 20 c. 33 1/3 d. 75 e. NG

	Weight	Price
Ruth's	380 lb.	$160
Dick's	400	160
Fred's	490	160
Sandy's	320	85
Joe's	460	135



26. What was the average selling price of the calves?

a. $85
b. $140
c. $160
d. $700
e. NG

27. Whose calf sold for the most per pound?

a. Ruth's
b. Fred's
c. Sandy's
d. Joe's
e. Dick's

28. What was the median weight of the calves?

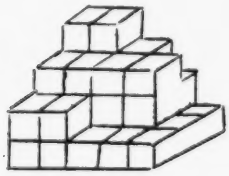
a. 400 lb.
b. 404 lb.
c. 460
d. 2020 lb.
e. NG

---

29. If a gross of pencils costs $7.20, how much will a half dozen pencils cost at that rate?

a. 5¢
b. 30¢
c. 60¢
d. $1.20
e. NG

Figure C



30. Figure C was once a regular prism, but some of the blocks have been taken away. How many are left?

a. 20
b. 23
c. 34
d. 40
e. NG

31. How tall is a tree that makes a shadow of 25 feet when a foot rule makes a shadow of 5 inches?

a. 5 ft.
b. 30 ft.
c. 60 ft.
d. 125 ft.
e. NG

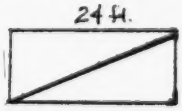


Figure D

32. How long is the diagonal line in Figure D?

a. 17'
b. 26'
c. 29'
d. 34'
e. NG

33. What amount will $200 become in two years at 3% interest compounded annually?

a. $206.18
b. $208.00
c. $209.00
d. $212.18
e. NG

34. You know that none of A is any of B, but all of C and D are both parts of A. So, you know that:

a. some of D may be some of C
b. some of B may be some of D
c. some of C may be some of B
d. some of C is some of D
e. some of B may be some of A

35. A box contains a black, a white, and a yellow marble. What are the chances that Jerry, without looking, will draw out the black marble first, then the yellow, and finally the white one?

a. 1/2
b. 1/3
c. 1/6
d. 1/8
e. NG

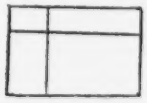
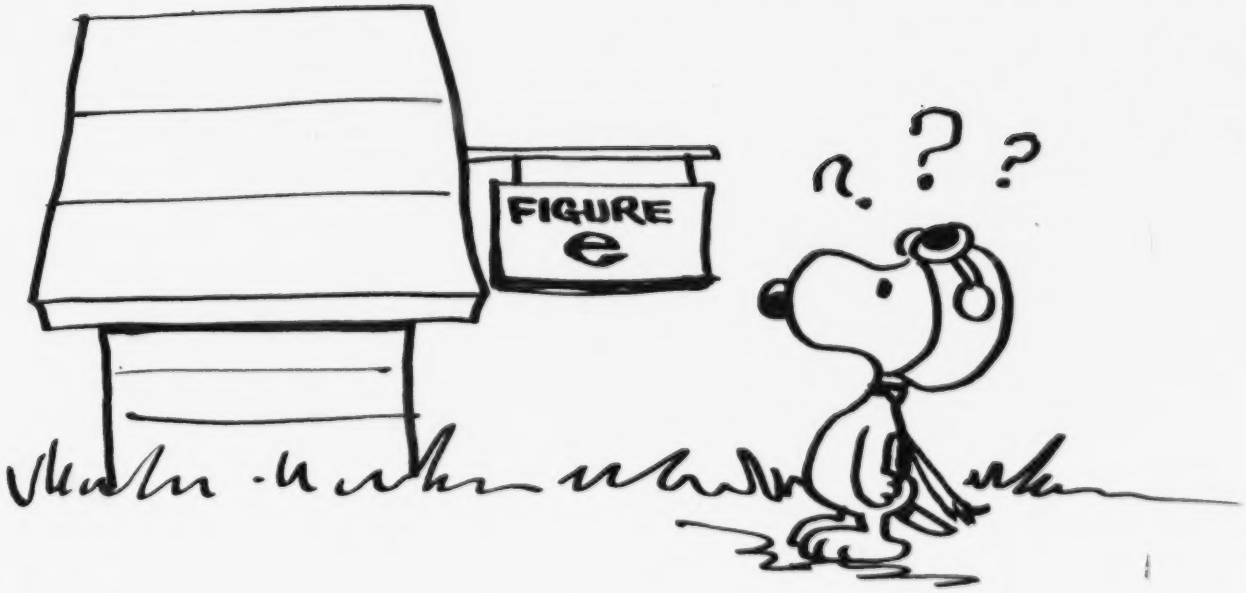


Figure E

36. How many different rectangles do you see in Figure E? Some overlap others.

a. 4
b. 5
c. 7
d. 9
e. NG



NAME _____ GIRL _____ BOY _____
Last First Middle

TEACHER _____ GRADE _____

SCHOOL _____ DATE _____
mo. day yr.

1.	a	b	c	d	e	18.	a	b	c	d	e	31.	a	b	c	d	e
	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0
2.	a	b	c	d	e	19.	a	b	c	d	e	32.	a	b	c	d	e
	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0
3.	a	b	c	d	e	20.	a	b	c	d	e	33.	a	b	c	d	e
	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0
4.	a	b	c	d	e	21.	a	b	c	d	e	34.	a	b	c	d	e
	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0
5.	a	b	c	d	e	22.	a	b	c	d	e	35.	a	b	c	d	e
	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0
6.	a	b	c	d	e	23.	a	b	c	d	e	36.	a	b	c	d	e
	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0
7.	a	b	c	d	e	24.	a	b	c	d	e						
	0	0	0	0	0		0	0	0	0	0						
8.	a	b	c	d	e	25.	a	b	c	d	e						
	0	0	0	0	0		0	0	0	0	0						
9.	a	b	c	d	e	26.	a	b	c	d	e						
	0	0	0	0	0		0	0	0	0	0						
10.	a	b	c	d	e	27.	a	b	c	d	e						
	0	0	0	0	0		0	0	0	0	0						
11.	a	b	c	d	e	28.	a	b	c	d	e						
	0	0	0	0	0		0	0	0	0	0						
12.	a	b	c	d	e	29.	a	b	c	d	e						
	0	0	0	0	0		0	0	0	0	0						
13.	a	b	c	d	e	30.	a	b	c	d	e						
	0	0	0	0	0		0	0	0	0	0						
14.	a	b	c	d	e												
	0	0	0	0	0												
15.	a	b	c	d	e												
	0	0	0	0	0												
16.	a	b	c	d	e												
	0	0	0	0	0												
17.	a	b	c	d	e												
	0	0	0	0	0												

Test # 1

Pre-test
Grouping & Base 10

(1) 18, 19, 20

(2) 207, 209, 211

(3) 1531, 1631, 1731

(4) 124, 114, 104

(5) 62, 162, 262, 362

(6) 7080, 8007, 8078, 8700

(7) 678, 687, 768, 786, 867, 876

(8) 5139, 5391, 5913, 5931

(9) 32

(10) 185

(11) 1998

(12) 1102

(13) 42

(14) 842

(15) 243

(16) 1355

(17) seventy-six

(18) two hundred forty-three

(19) thirty thousand, three

(20) one hundred sixty-eight thousand, twenty five

(21) two thousand, sixty

(22) tens

(23) ten-thousands

(24) hundred-thousands

(25) ones or units

(26) 248

(27) 700,070

(28) 32,410

(29) 1,000,023

(30) 60,215

(31) 47,248

(32) 6,402

(33) 703,021

(34) 204,321

(35) 2,768

Test # 2

Post-test
Grouping & Base-ten

(1) 53, 63, 73

(2) 2442, 2542, 2642

(3) 316, 306, 296

(4) 227, 237, 273, 372

(5) 2030, 2300, 3002, 3020, 3200

(6) 367, 376, 637, 736, 763

(7) 63

(8) 733

(9) 1002

(10) 999

(11) 77

(12) 431

(13) 252

(14) two thousand, thirty-seven

(15) ten thousand, thirteen

(16) two hundred forty-seven thousand, three hundred sixty-one

(17) seventy thousand, three

(18) two million, five thousand, two hundred forty-six

(19) hundreds

(20) ten-thousands

(21) millions

(22) 803

(23) 33,768

(24) 7,234

(25) 8,102

(26) 20,078

(27) 267

(28) 4,079

(29) 19,340

(30) 210,022

Test # 3

Pre-test
Basic Properties

(1) a
(2) e
(3) b
(4) d
(5) f
(6) e
(7) h
(8) c
(9) g
(10) b

Test # 4

Post-test
Basic Properties

(1) b
(2) h
(3) c
(4) e
(5) a
(6) d
(7) h
(8) f
(9) g
(10) b

Test #5

Pre-test
Other Bases
Without

(1) 1, 10, 11, 100, 101, 110, 111, 1000 base 2
(2) 1, 2, 3, 4, 10, 11, 12, 13 base 5
(3) 1, 2, 3, 4, 5, 6, 10, 11 base 7
(4) 6's
(5) 49's
(6) 125's
(7) 12's
(8) 14
(9) 158
(10) 1000_{three}
(11) 1041_{five}
(12) 4034_{eight}
(13) 10_{five}
(14) 0, 1, 2, 3, 4, 5, 6, 7, 8
(15) 37_{twelve}

Test # 6

Pre-test
Other Bases
With +, −, x

(1) 1, 10, 11, 100, 101, 110, 111, 1000 base 2

(2) 1, 2, 10, 11, 12, 20, 21, 22 base 3

(3) 1, 2, 3, 4, 5, 6, 7, 8 base 9

(4) 2×25 or 2×5^2 or 50

(5) 3×4 or 12

(6) 9×12

(7) 63

(8) 9

(9) 218

(10) 101111_{two}

(11) 2300_{four}

(12) 401_{nine}

(13) 1000111_{two}

(14) 0, 1, 2, 3, 4, 5

(15) 1120_{five}

(16) 1313_{seven}

(17) 22444_{five}

(18) 101101_{two}

(19) 53_{eight}

(20) 32_{five}

Test # 7

Post-test
Other Bases
Without

(1) 1001_{three}

(2) 1, 2, 3, 10, 11, 12, 13, 20, 21, 22, 23, 30

(3) 3×25 or 3×5^2 or 75

(4) 1 or 1×8^0

(5) 5×6 or 30

(6) 0, 1, 2, 3, 4, 5, 6, 7

(7) 66_{eleven}

(8) 67

(9) 399

(10) 190

(11) 13

(12) 202_{six}

(13) 11021_{five}

(14) 100111_{two}

(15) 1311_{four}

Test # 8

Post-test
Other Bases
With +, −, x

(1) 4×7^2 or 4×49

(2) $(2 \times 7^3) + (3 \times 7^2) + (1 \times 7^1) + (6 \times 7^0)$

(3) 0, 1, 2, 3, 4, 5, 6

(4) 3×5^3 or 3×125

(5) 116

(6) 296

(7) 53

(8) 102220_{three}

(9) 1253_{eight}

(10) 11101010_{two}

(11) 201_{seven}

(12) 611_{eight}

(13) 110101_{two}

(14) 31_{five}

(15) 24504_{six}

(16) 232310_{four}

(17) 123_{four}

(18) 1332_{five}

(19) 33325_{seven}

(20) 2604_{eight}

Test # 9

Pre-test
Rounding
Without Decimals

(1) 50

(2) 200

(3) 230

(4) 5400

(5) 80,000

(6) 1400

(7) 70,000

(8) 6,830,000

(9) 6240

(10) 10,000

(11) 450,200

(12) 64,380

(13) 600

(14) 600

(15) 63,000

Test # 10

Post-test
Rounding
Without Decimals

(1) 80

(2) 400

(3) 7700

(4) 3400

(5) 190

(6) 5000

(7) 5500

(8) 48,100

(9) 50,000

(10) 380

(11) 800

(12) 800

(13) 10,000

(14) 18,000,000

(15) 44,000

Test # 11

Pre-test
Rounding
With Decimals

(1) 50

(2) 100

(3) 470

(4) 26

(5) 3.4

(6) 70,000

(7) 10,410

(8) 435.0

Test # 11 Cont.

(9) 4502

(10) 6,830,000

(11) 1000

(12) 600

(13) 600

(14) .44

(15) 643.8

Test # 12

Post-test
Rounding
With Decimals

(1) 600

(2) 7

(3) 24.6

(4) 1000

(5) neither

(6) 900

(7) 11,000

(8) 6

(9) 6000

(10) 1100

(11) 2.5

(12) 8.06

(13) 8.0

(14) .072

(15) 80,000

Test # 13

Pre-test
Inequalities

(1) =
(2) ≠
(3) =
(4) ≠
(5) ≠
(6) =
(7) ≠
(8) <
(9) >
(10) <
(11) <
(12) =
(13) >
(14) <
(15) =

Test # 14

Post-test
Inequalities

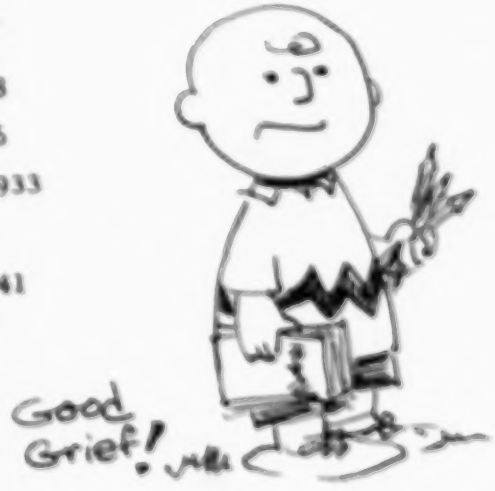
(1) =
(2) =
(3) ≠
(4) ≠
(5) =
(6) =
(7) >
(8) =

Test # 14 Cont.

(9) <
(10) >
(11) >
(12) <
(13) =
(14) <
(15) >

Test # 15
Pre-test
Whole # Operations

(1) 126
(2) 13903
(3) 2281
(4) 1026
(5) 10962
(6) 1108
(7) 34032
(8) 1248
(9) 2919
(10) 148 R 13
(11) 100 R 36
(12) 11 R 8
(13) 83
(14) 268
(15) 19408
(16) 83936
(17) 136,933
(18) 509
(19) 17,841
(20) 216



Test # 16

Post-test
+, − Whole # s

(1) 398
(2) 8776
(3) 14050
(4) 1,568,011
(5) 384
(6) 1767
(7) 1235
(8) 3350
(9) 6415
(10) 546
(11) 7651
(12) 375
(13) 1939
(14) 1808
(15) 19261

Test # 17

Post-test
x, ÷ Whole # s

(1) 5049
(2) 70278
(3) 28350
(4) 69384
(5) 7,802,382
(6) 39,824
(7) 201
(8) 42
(9) 86 R 57

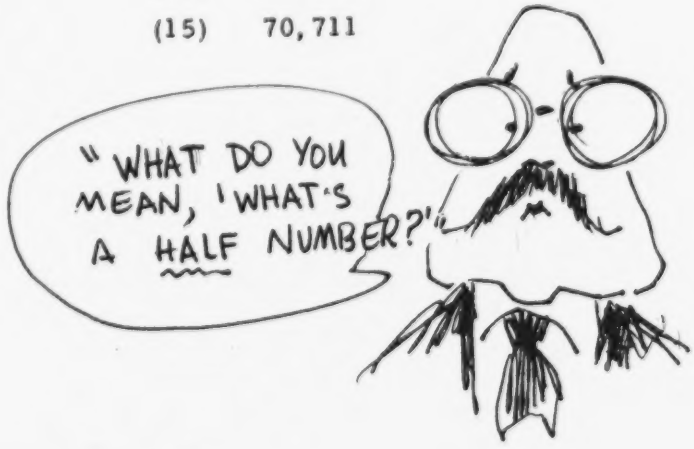
Test #17 Cont.

(10) 25
(11) 1739
(12) 102,800
(13) 244
(14) 480
(15) 66 R 27

Test # 18

Post-test
Whole # Operations

(1) 2348
(2) 6513
(3) 22,761
(4) 346
(5) 62,794
(6) 62 R 22
(7) 67,116
(8) 1358
(9) 2214
(10) 29710
(11) 624
(12) 88,919
(13) 197,410
(14) 98 R 27
(15) 70,711



Test # 19

Pre-test
Theory & Conversions
of Decimals
Without Repeating

(1) $\frac{6}{100}$ or 6 hundredths

(2) division

(3) divide 3 by 4

(4) 37.23

(5) 6.042

(6) .706

(7) 100.00002

(8) 304.0106

(9) thirty-one thousandths

(10) one and thirty-six hundredths

(11) twenty-nine and nine hundred forty thousandths

(12) two hundred forty-three thousandths

(13) seven hundred three and sixteen ten-thousandths

(14) .8

(15) .125

(16) .15

(17) $\frac{1}{4}$

(18) $\frac{3}{5}$

(19) $\frac{13}{10}$ or $1\frac{3}{10}$

(20) 1000 or $\frac{136}{1000}$

Test # 20

Pre-test
Theory & Conversions
of Decimals
With Repeating

(1) ones
tenths
hundredths
thousandths

(2) division

(3) 78.063

(4) .0642

(5) 20.07

(6) 15.50

(7) 480.3

(8) seventy-six thousandths

(9) four and twenty-five hundredths

(10) thirty-seven and four hundred eighty-three thousandths

(11) ten and eight hundred sixty-three ten-thousandths

(12) eight hundred seven and twenty-one ten-thousandths

(13) .75

(14) $.8\overline{3}$

(15) .375

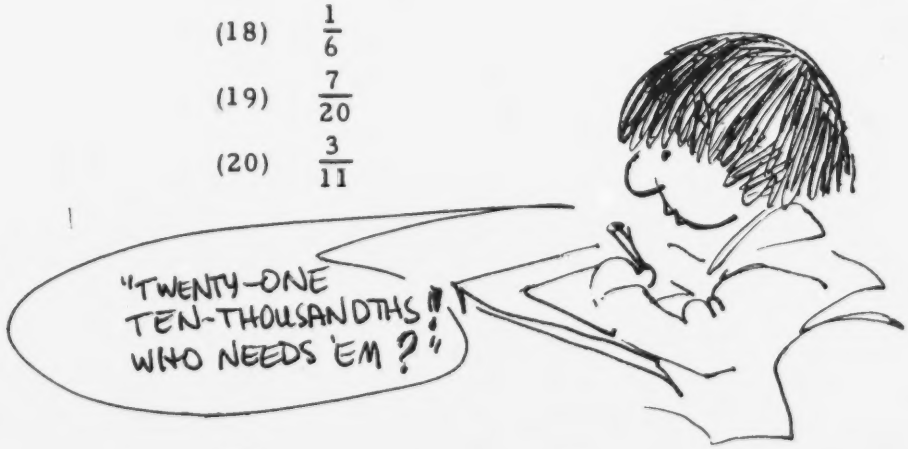
(16) $1.\overline{3}$

(17) $\frac{7}{8}$

(18) $\frac{1}{6}$

(19) $\frac{7}{20}$

(20) $\frac{3}{11}$



Test # 21

Post-test
Theory & Conversions
of Decimals
Without Repeating Decimals

(1) 4 thousandths or $\frac{4}{1000}$

(2) division

(3) 203.04

(4) 7.21

(5) .017

(6) 2004.0057

(7) two and forty-six hundredths

(8) seventy-eight thousandths

(9) two hundred forty-three and seven hundred sixty-eight thousandths

(10) four thousand twenty-one and thirty ten-thousandths

(11) .6

(12) .375

(13) $\frac{7}{20}$

(14) $\frac{4}{5}$

(15) $2\ \frac{9}{20}$ or $\frac{49}{20}$

Test # 22

Post-test
Theory & Conversions
of Decimals
with Repeating Decimals

(1) $\frac{3}{10}$ or 3 tenths

$\frac{5}{10,000}$ or 5 ten-thousandths

(2) two hundred six and forty-three thousandths

(3) seventeen and ninety-seven hundredths

(4) six hundred eighty-three ten-thousandths

(5) one hundred seventy and two hundred thirty-seven thousandths

(6) 48.17

(7) .329

(8) 6.020

(9) 2010.00210

(10) .5

(11) $.1\overline{6}$

(12) .875

(13) $\frac{5}{6}$

(14) $\frac{5}{8}$

(15) $\frac{8}{33}$

Test # 23

Pre-test
x, ÷ by 10, 100, etc.

(1) 200

(2) 30

(3) 34

(4) 7680

(5) .52 or 00.52

(6) 3.6 or 03.6

(7) 34 or 34.0

(8) 7.3

(9) .086

(10) .234

(11) 2.480

(12) .7068

(13) ,76

(14) .76

(15) 2, right

Test # 24

Post-test
x, ÷ by 10, 100, etc.

(1) 2900

(2) 6.8

(3) 3200

(4) 346.3

(5) 2

(6) 1.6

(7) .0021

(8) .0438

(9) multiply by 1000

(10) divide by 100

Test # 24 Cont.

(11) 29

(12) 29.0

(13) 2900

(14) 2900

(15) 2763

Test # 25

Pre-test
Decimal Operations

(1) 29.971

(2) 2.2009

(3) 447.7475

(4) 260.536

(5) 6.24

(6) 4.75

(7) 12.126

(8) 33.232

(9) 3.1166

(10) 164.5

(11) 2.016

(12) .5907

(13) .0065

(14) 5.642

(15) .002996

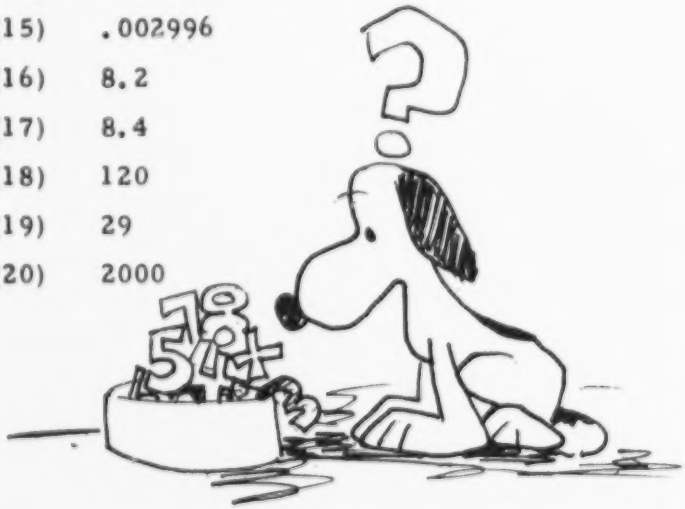
(16) 8.2

(17) 8.4

(18) 120

(19) 29

(20) 2000



Test # 26

Post-test
+, - Decimals

(1) 25.115
(2) 267.9133
(3) 242.173
(4) 887.8947
(5) 455.0155
(6) 1.56
(7) 6.5231
(8) 7.325
(9) 267.3701
(10) .1616
(11) .13628
(12) 23.02
(13) 29.601
(14) 36.232
(15) 57.917

Test # 27

Post-test
x, ÷ Decimals

(1) 64.584
(2) .00072
(3) 75.11502
(4) 29
(5) 90
(6) 620
(7) 1968.65
(8) 326.43
(9) 16.416
(10) 203

Test # 27 Cont.

(11) 9240
(12) .12
(13) 11,800
(14) 571.5
(15) $899.00

Test # 28

Post-test
Decimal Operations

(1) 20.08
(2) 13.032
(3) 260.536
(4) 4.75
(5) 2.6
(6) 8.848
(7) 25.32
(8) 2.016
(9) 12.00
(10) 154.212
(11) .00090
(12) 4.6
(13) .16
(14) 49
(15) 9240
(16) 12.4432
(17) 16.768
(18) 1968.75
(19) .38
(20) .13

Test # 29

Pre-test
Fraction Theory

(1) $\frac{5}{n}$, n is a whole number

(2) $\frac{n}{7}$, $n > 7$ and a whole number

(3) yes

(4) no

(5) no

(6) 0

(7) $\frac{3}{8}$

(8) $\frac{5}{4}$

(9) $\frac{1}{3}$, $\frac{3}{9}$

(10) $\frac{9}{6}$, $\frac{3}{2}$

(11) $\frac{4}{8}$, $\frac{6}{12}$, $\frac{7}{14}$

(12) $\frac{3}{9}$, $\frac{4}{12}$, $\frac{5}{15}$

(13) $\frac{2}{3}$, $\frac{8}{12}$, $\frac{10}{15}$

(14) $1\ \frac{4}{16}$, $1\ \frac{16}{64}$, $1\ \frac{32}{128}$

(15) $\frac{5}{8}$, $\frac{31}{48}$, $\frac{2}{3}$, $\frac{11}{16}$, $\frac{17}{24}$, $\frac{3}{4}$

Test # 30

Pre-test
Fractional Conversions

(1) a, c, d

(2) 18

(3) 12

(4) 14

(5) 18

(6) 72

(7) 28

(8) $\frac{5}{7}$

(9) $\frac{3}{4}$

(10) $\frac{2}{5}$

(11) $\frac{8}{3}$

(12) $\frac{15}{2}$

(13) $\frac{28}{5}$

(14) $\frac{31}{8}$

(15) $4\ \frac{1}{4}$

(16) $3\ \frac{7}{8}$

(17) $1\ \frac{1}{2}$

(18) 6

(19) $5\ \frac{2}{5}$

(20) 5

(21) 5

(22) 30

(23) 34

(24) 17

(25) $\frac{35}{60}$, $\frac{50}{60}$, $\frac{27}{60}$

Test # 31

Post-test
Theory & Conversions

(1) $\frac{6}{9}$

(2) no

(3) $\frac{4}{8}$ or $\frac{1}{2}$

(4) $\frac{14}{5}$

(5) 5

(6) 34

(7) 8

(8) 1

(9) $\frac{3}{4}$

(10) $\frac{1}{5}$

(11) $\frac{2}{5}$

(12) $4\ \frac{1}{4}$

(13) $3\ \frac{7}{8}$

(14) $1\ \frac{1}{2}$

(15) $\frac{19}{5}$

(16) $\frac{5}{3}$

(17) $\frac{36}{5}$

(18) $\frac{5}{24}, \frac{3}{8}, \frac{2}{3}, \frac{3}{4}, \frac{5}{6}$

(19) $\frac{1}{4}, \frac{1}{3}, \frac{1}{2}, \frac{7}{12}, \frac{5}{6}$

(20) no

Test # 32

Pre-test
Factors & Primes

(1) 3×3

(2) 156

(3) 4900

(4) 3675

(5) 2079

(6) 11

(7) 3

(8) 13

(9) 2

(10) 2×3^3

(11) $2^3 \times 5^2$

(12) $2^2 \times 3^2 \times 7$

(13) 3^4

(14) $2 \times 5 \times 7$

(15) 5×7^2

Test # 33

Pre-test
G.C.F. - Reducing

(1) 4

(2) 21

(3) 14

(4) 3

(5) 8

(6) 15

(7) 1

(8) 16

(9) $\frac{3}{5}$

(10) $\frac{5}{6}$

(11) $\frac{2}{3}$

(12) $\frac{12}{17}$

(13) $\frac{3}{4}$

(14) $\frac{7}{13}$

(15) 1

Test # 34

Pre-test
L.C.M. & Denominators

(1) 36

(2) 75

(3) 280

(4) 60

(5) 1260

(6) 1890

(7) 840

(8) 60

Test # 34 Cont.

(9) 270

(10) 220

(11) 40

(12) 80

(13) 36

(14) 75

(15) 48

Test # 35

Post-test
Prime Factors, G.C.F., L.C.M.

(1) 28

(2) 800

(3) 252

(4) 5

(5) 2

(6) $2^3 \times 3$

(7) 3^4

(8) $2^2 \times 5^2$

(9) 5×7^2

(10) 4

(11) 8

(12) 4

(13) 36

(14) 75

(15) 80

(16) 1

(17) $\frac{3}{4}$

(18) $\frac{3}{4}$

(19) 48

(20) 60

Test # 36

Pre-test
Fraction Operations

(1) $21\frac{1}{8}$

(2) $6\frac{11}{12}$

(3) $8\frac{19}{20}$

(4) $\frac{4}{7}$

(5) 8

(6) $\frac{119}{36}$ or $3\frac{11}{36}$

(7) $9\frac{23}{24}$

(8) $3\frac{1}{6}$

(9) $2\frac{17}{18}$

(10) $4\frac{1}{4}$

(11) $\frac{16}{15}$ or $1\frac{1}{15}$

(12) $\frac{7}{22}$

(13) $\frac{39}{5}$ or $7\frac{4}{5}$

(14) $\frac{14}{5}$ or $2\frac{4}{5}$

(15) $\frac{1}{2}$

(16) 36

(17) $8\frac{11}{12}$

(18) $\frac{4}{3}$ or $1\frac{1}{3}$

(19) $\frac{3}{2}$ or $1\frac{1}{2}$

(20) 3

Test # 37

Post-test
Adding Fractions

(1) $\frac{4}{5}$

(2) $\frac{3}{4}$

(3) $1\frac{2}{3}$ or $\frac{5}{3}$

(4) $1\frac{2}{9}$

(5) 13

(6) $\frac{10}{15}$, $\frac{6}{15}$

(7) $\frac{6}{24}$, $\frac{20}{24}$, $\frac{21}{24}$

(8) $\frac{4}{6}$, $\frac{1}{6}$, $\frac{3}{6}$

(9) $\frac{10}{18}$, $\frac{15}{18}$, $\frac{12}{18}$

(10) $\frac{19}{14}$ or $1\frac{5}{14}$

(11) $28\frac{5}{12}$

(12) $26\frac{7}{30}$

(13) $11\frac{5}{16}$

(14) $8\frac{1}{15}$

(15) $37\frac{1}{24}$

Test # 38

Post-test
Subt. Fractions

(1) $\frac{2}{5}$

(2) $1\ \frac{1}{2}$

(3) $3\ \frac{1}{4}$

(4) $\frac{1}{10}$

(5) $\frac{1}{2}$

(6) $4\ \frac{1}{3}$

(7) $5\ \frac{11}{12}$

(8) $6\ \frac{9}{10}$

(9) $2\ \frac{1}{4}$

(10) $3\ \frac{1}{8}$

(11) $18\ \frac{3}{4}$

(12) $4\ \frac{1}{4}$

(13) $8\ \frac{11}{12}$

(14) $20\ \frac{7}{10}$

(15) $5\ \frac{11}{24}$

Test # 39

Post-test
Mult. Fractions

(1) $\frac{28}{5}$ or $5\ \frac{3}{5}$

(2) $\frac{9}{8}$ or $1\ \frac{1}{8}$

(3) $\frac{10}{21}$

(4) $\frac{5}{32}$

Test # 39 Cont.

(5) $\frac{4}{7}$

(6) 1

(7) $\frac{65}{8}$ or $8\ \frac{1}{8}$

(8) $\frac{12}{7}$ or $1\ \frac{5}{7}$

(9) $\frac{39}{5}$ or $7\ \frac{4}{5}$

(10) 12

(11) 6

(12) $\frac{63}{25}$ or $2\ \frac{13}{25}$

(13) $\frac{21}{2}$ or $10\ \frac{1}{2}$

(14) $\frac{64}{5}$ or $12\ \frac{4}{5}$

(15) $11\ \frac{29}{40}$

Test # 40

Post-test
Div. Fractions

(1) $\frac{3}{8}$

(2) 7

(3) $\frac{16}{15}$ or $1\ \frac{1}{15}$

(4) $\frac{3}{4}$

(5) $\frac{1}{5}$

(6) $\frac{72}{29}$ or $2\ \frac{14}{29}$

(7) $\frac{2}{3}$

(8) $\frac{7}{8}$

(9) 5

(10) $\frac{4}{3}$ or $1\ \frac{1}{3}$

Test # 40 Cont.

(11) $\frac{4}{5}$

(12) $\frac{10}{21}$

(13) $\frac{14}{5}$ or $2\ \frac{4}{5}$

(14) $\frac{16}{3}$ or $5\ \frac{1}{3}$

(15) $\frac{33}{16}$ or $2\ \frac{1}{16}$

Test # 41

Post-test
+, − Fractions

(1) $\frac{17}{16}$ or $1\ \frac{1}{16}$

(2) $2\ \frac{55}{63}$

(3) $7\ \frac{17}{24}$

(4) $\frac{7}{24}$

(5) $1\ \frac{11}{16}$

(6) $2\ \frac{5}{6}$

(7) $4\ \frac{13}{15}$

(8) $\frac{5}{24}$

(9) $14\ \frac{13}{15}$

(10) $5\ \frac{17}{24}$

Test # 42

Post-test
x, ÷ Fractions

(1) $\frac{12}{25}$

(2) 6

(3) $\frac{7}{15}$

(4) $\frac{15}{32}$

(5) 18

(6) 1

(7) $\frac{14}{5}$ or $2\frac{4}{5}$

(8) 27

(9) $\frac{11}{16}$

(10) $\frac{3}{16}$

(11) 19

(12) $\frac{7}{15}$

(13) $\frac{31}{20}$ or $1\frac{11}{20}$

(14) $\frac{68}{75}$

(15) 6

Test # 43

Post-test
Fraction Operations

(1) $16\frac{7}{24}$

(2) $2\frac{7}{12}$

(3) $13\frac{3}{8}$

(4) $\frac{170}{3}$ or $56\frac{2}{3}$

(5) $\frac{106}{39}$ or $2\frac{28}{39}$

Test # 43 Cont.

(6) $11\frac{29}{40}$

(7) $\frac{3}{20}$

(8) $5\frac{2}{15}$

(9) 12

(10) $\frac{6}{25}$

(11) $36\frac{11}{12}$

(12) $1\frac{5}{6}$

(13) $\frac{3}{2}$ or $1\frac{1}{2}$

(14) $14\frac{9}{20}$

(15) $\frac{5}{4}$ or $1\frac{1}{4}$

Test # 44

Pre-test
Ratio & Proportion

(1) $\frac{2}{3}$

(2) $\frac{3}{1}$

(3) $\frac{3}{2}$

(4) $\frac{1}{12}$

(5) $\frac{1}{3}$

(6) $\frac{3}{10}$

(7) $\frac{3}{8}$

(8) 8

(9) 6

(10) 7

(11) 15

Test # 44 Cont.

(12) 20

(13) 5

(14) 1.6

(15) 30

Test # 45
Post-test
Ratio & Proportions

(1) $\frac{5}{2}$

(2) $\frac{1}{3}$

(3) $\frac{2}{5}$

(4) $\frac{2}{3}$

(5) $\frac{3}{2}$

(6) $\frac{3}{1}$

(7) $\frac{4}{1}$

(8) 1

(9) 5

(10) $5\frac{2}{5}$ or 5.4

(11) 21

(12) 24

(13) $\frac{5}{3}$ or $1\frac{2}{3}$

(14) 6

(15) 56

Test # 46

Pre-test
Alternate Forms

(1) 25%

(2) .375 or $.37\frac{1}{2}$

(3) $\frac{3}{5}$

(4) .125 or $.12\frac{1}{2}$

(5) $\frac{4}{5}$

(6) $87\frac{1}{2}\%$

(7) $\frac{2}{3}$

(8) $83\frac{1}{3}\%$

(9) .75

(10) .625 or $.62\frac{1}{2}$

(11) $\frac{1}{2}$

(12) 10%

(13) 100%

(14) $33\frac{1}{3}\%$

(15) $\frac{1}{6}$

Test # 47

Post-test
Alternate Forms

(1) $\frac{1}{4}$

(2) $\frac{3}{8}$

(3) $87\frac{1}{2}\%$

(4) .6

(5) 100%

(6) $.83\frac{1}{3}$

Test # 47 Cont.

(7) $\frac{1}{6}$

(8) $\frac{1}{10}$

(9) $66\frac{2}{3}$

(10) $62\frac{1}{2}\%$

(11) $\frac{1}{8}$

(12) $\frac{1}{3}$

(13) 50%

(14) $\frac{4}{5}$

(15) 75%

Test # 48

Pre-test
Finding Percentage

(1) 19.5

(2) 2.5

(3) 255

(4) 22.5

(5) 39

(6) 12

(7) 1000

(8) 425

(9) 70

(10) 50

Test # 49

Pre-test
Finding Rate

(1) 50%

(2) $62\frac{1}{2}\%$

(3) $16\frac{2}{3}\%$

(4) 10%

(5) 25%

(6) $62\frac{1}{2}\%$

(7) 25%

(8) 5%

(9) 30%

(10) $66\frac{2}{3}\%$

Test # 50

Pre-test
Finding Base

(1) 72

(2) 56

(3) 50

(4) 24

(5) 96

(6) 1200

(7) 75

(8) 200

(9) 90

(10) 42

Test # 51

Pre-test
Mixed Forms

(1) 60%
(2) 60
(3) 2.24
(4) 40%
(5) 54.6
(6) 24
(7) 86
(8) 160%
(9) 25.5
(10) 30
(11) $16\frac{2}{3}\%$
(12) 1000
(13) 90%
(14) .714
(15) 1152

Test # 52

Post-test
Mixed Forms

(1) 20%
(2) 2.88
(3) 25%
(4) 50%
(5) 8
(6) 309.12
(7) 25%
(8) 30
(9) 24
(10) 5%

Test # 52 Cont.

(11) 6.25
(12) 30
(13) 10
(14) 60%
(15) 160%

Test # 53

Pre-test
Basic Problems

(1) $62\frac{1}{2}$
(2) 60%
(3) 27
(4) 5%
(5) 625 acres
(6) 80.75 lbs.
(7) $150.00
(8) 5200 families
(9) 6 quarts
(10) 860 students

Test # 54

Post-test
Basic Problems

(1) $6.25
(2) $8\frac{1}{3}\%$
(3) $6000
(4) $87\frac{1}{2}\%$
(5) $105.00
(6) 1307 pupils

Test # 54 Cont.

(7) 338 girls
(8) 16 games
(9) 28%
(10) 35%

Test # 55

Post-test
Application Problems

(1) $27.00
(2) $22.50
(3) $10.00
(4) $18.00
(5) 20%
(6) 500 bushels
(7) $51.30
(8) $4000.00
(9) $1.75
(10) 6%

Test # 56

Pre-test
Signed Numbers

(1) -7
(2) 5
(3) -4
(4) 15
(5) 61
(6) 62
(7) -26
(8) 672
(9) -160
(10) -6
(11) -70
(12) 43
(13) -88
(14) 280
(15) 7
(16) 5
(17) 119
(18) 21
(19) 50
(20) 24
(21) 106
(22) -69
(23) -125
(24) 21
(25) 3

Test # 57

Post-test
Signed Number

(1) -20
(2) -22
(3) -18
(4) -16
(5) 76
(6) 0
(7) -21
(8) 117
(9) 9
(10) 8
(11) -23
(12) 15
(13) 39
(14) 32
(15) -14
(16) -29
(17) 22
(18) 21
(19) 119
(20) -41

Test # 58

Pre-test
Exponents

(1) x^6
(2) 5^4
(3) $2^2 \cdot 3^2$
(4) $3^9 \cdot 7^2$
(5) a^{x+y-z}
(6) $\frac{32}{47}$
(7) $\frac{3^{12} \cdot z^3}{x^7 \cdot y^2}$
(8) $\frac{6^4}{5}$
(9) $\frac{x^5 \cdot s}{z^3}$
(10) $\frac{1}{3^2 \cdot y^2}$
(11) $3^{11} \cdot 2^{20}$
(12) 10^8
(13) $\frac{x^{14} \cdot y^6}{a^{15}}$
(14) 7^{12}
(15) $\frac{1}{24}$

Test # 59

Post-test
Exponents

(1) y^6

(2) x^3

(3) $3^{-3} \cdot 5^3$

(4) $\frac{a^3}{5^5}$

(5) $\frac{3^2 \cdot a^4}{2 \cdot b^3}$

(6) $\frac{a^5}{5^3 \cdot b^2}$

(7) $\frac{4^3}{x^2}$

(8) $\frac{1}{3^2 \cdot 5^6 \cdot s^4 \cdot 6}$

(9) $\frac{x}{y^4}$

(10) $\frac{x^5 \cdot s}{z^3}$

(11) 10^{26}

(12) 4^{-6}

(13) $\frac{1}{24}$

(14) $\frac{b^7}{a^3}$

(15) $a^{12} \cdot b^{-3}$

Test # 60

Pre-test
Scientific Notation

(1) .0000037

(2) 100,000,000

(3) 60,420,000

(4) .0000000021

(5) 10^8

(6) 8.6×10^{-5}

(7) 9.2×10^7

(8) 5.6×10^{-6}

(9) 1.8×10^6

(10) 10^{-8}

(11) 1.6×10^9

(12) 3.735×10^6

(13) 5.2×10^{10}

(14) 4×10^{-10}

(15) 1.75×10^{10}

Test # 61

Post-test
Scientific Notation

(1) 4.56×10^{-2}

(2) 3.85×10^7

(3) 9×10^6

(4) 2.4×10^{-8}

(5) .0000001468

(6) 321,000

(7) .000005

(8) 1,800

(9) 4×10^{-6}

(10) 2×10^{13}

(11) 4.95×10^{11}

(12) 1.1 or 1.1×10^0

(13) 8×10^3

(14) 9.46×10^3

(15) 1.7×10^4

Test # 62

Pre-test
Equations +, −

(1) 39

(2) $3\frac{1}{4}$ or $\frac{13}{4}$

(3) 6.02

(4) 0

(5) −19

(6) 12

(7) $1\frac{5}{8}$ or $\frac{13}{8}$

(8) 6.6

(9) −2

(10) −8

Test # 63

Pre-test
Equations x, ÷

(1) 9

(2) 48

(3) 27

(4) −35

(5) $\frac{1}{4}$

(6) 4000

(7) 256

(8) -9

(9) 6

(10) 34

Test # 64

Post-test
Equations- Simple Mixed

(1) 101

(2) -8

(3) 21

(4) 57

(5) -6.1

(6) 5

(7) $^{-}13.6$

(8) $2\frac{5}{6}$ or $\frac{17}{6}$

(9) 7

(10) -2

Test # 65

Post-test
Equations - 2 Step

(1) 14

(2) $^{-}3$

(3) 72

(4) 3

(5) 7

(6) -2

(7) 10

(8) 300

(9) -6

(10) 14

Test # 66

Pre-test
Equations-Mixed

(1) -3

(2) 16

(3) 4

(4) $\frac{27}{2}$ or $13\frac{1}{2}$

(5) 12

(6) $-\frac{44}{3} = {}^{-}14\frac{2}{3}$

(7) $\frac{4}{5}$

(8) $\frac{1}{28}$

(9) -6

(10) $\frac{11}{3}$ or $3\frac{2}{3}$

Test # 67

Post-test
Equations-Mixed

(1) $\frac{4}{3}$

(2) 10

(3) -5

(4) 21

(5) 72

(6) 80

(7) $-\frac{1}{2}$

(8) $-\frac{2}{3}$

(9) $\frac{4}{11}$

(10) -6

Test #68

Pre-test
Solving Inequalities

(1) $a > 0$

(2) $h < -2$

(3) $y > -8$

(4) $w < 35$

(5) $x \geq -\frac{3}{4}$

(6) $r \geq -24$

(7) $x \leq 18$

(8) $r > -6$

(9) $b < 56$

(10) $b < -4$

Test #69

Post-test
Solving Inequalities

(1) $p < -15$

(2) $r \leq 14$

(3) $x > 3$

(4) $s < -8$

(5) $t < 7$

(6) $b < 2$

(7) $y \geq 90$

(8) $t < 17$

(9) $a > -5$

(10) $a > -18$

Test #70

Post-test
Word Problems-Simple

(1) 9" by 13"

(2) socks $ .75
shoes $9.25

(3) 4, 17

(4) four 3" pieces
one 9" piece

(5) 7, 9, 11

(6) 4 dimes

(7) $57\frac{1}{2}$, $32\frac{1}{2}$

(8) 12 inches

(9) Henry - 11years
Sam - 22years

(10) 2 ft. by 6 ft.

Period_____ Name_____

Teacher_____ Date_____

Score_____

Give the next three numbers in each series. Answers:

1. 15, 16, 17 1) _____

2. 201, 203, 205 2) _____

3. 1231, 1331, 1431 3) _____

4. 154, 144, 134 4) _____

Put the following groups of numbers in order starting with the smallest.

5) 362, 162, 262, 62 5) _____

6) 8700, 8007, 8070, 7080, 8078 6) _____

7) 876, 678, 786, 867, 687, 768 7) _____

8) 5391, 5139, 5931, 5913 8) _____

9) What number is 4 more than 28? 9) _____

10) What number is 7 less than 192? 10) _____

11) What number is 8 less than 2006? 11) _____

12) What number is 4 more than 1098? 12) _____

13) How much is 3 tens and 12 ones? 13) _____

14) How much is 7 hundreds, 13 tens and 12 ones? 14) _____

15) How much is 2 hundreds and 43 ones? 15) _____

16) How much is 11 hundreds, 24 tens and 15 ones? 16) _____

Write each of the following numbers in words:

17) 76 _____

18) 243 _____

19) 30,003 _____

20) 168,025 _____

21) 2,060 _____

Use 7,683,542 for the next group of questions.

22) Name the place value of the 4. 22) _____

23) Name the place value of the 8. 23) _____

24) Name the place value of the 6. 24) _____

25) Name the place value of the 2. 25) _____

Write each of the following numbers.

26) two hundred forty-eight 26) _____

27) seven hundred thousand, seventy 27) _____

28) thirty-two thousand, four hundred ten 28) _____

29) one million, twenty-three 29) _____

30) sixty thousand, two hundred fifteen 30) _____

31) What number is 10 more than 47,238? 31) _____

32) What number is 300 less than 6,702? 32) _____

33) What number is 20,000 more than 683,021? 33) _____

34) What number is 200,000 more than 4,321? 34) _____

35) What number is one million less than 1,002,768? 35) _____

Period_____ Name_____

Teacher_____ Date_____

Score_____

Give the next three numbers in each series

Answers:

1) 23, 33, 43 1) _____

2) 2142, 2242, 2342 2) _____

3) 346, 336, 326 3) _____

Put the following groups of numbers in order starting with the smallest.

4) 273, 372, 227, 237 4) _____

5) 2300, 3200, 2030, 3020, 3002 5) _____

6) 376, 736, 637, 763, 367 6) _____

7) What number is 7 more than 56? 7) _____

8) What number is 9 less than 742? 8) _____

9) What number is 3 more than 999? 9) _____

10) What number is 6 less than 1005? 10) _____

11) How much is 6 tens and 17 ones? 11) _____

12) How much is 3 hundreds, 12 tens and 11 ones? 12) _____

13) How much is 2 hundreds and 52 ones? 13) _____

Write each of the following in words.

14) 2037 _____

15) 10,013 _____

16) 247,361 _____

17) 70,003 _____

18) 2,005,246 _____

Use 6,453,201 for the next group of questions.

19) Name the place value of the 2 19) _____

20) Name the place value of the 5. 20) _____

21) Name the place value of the 6. 21) _____

22) What number is 20 more than 783? 22) _____

23) What number is 10,000 more than 23,768? 23) _____

24) What number is two million less than 2,007,234? 24) _____

25) What number is 600 less than 8,702? 25) _____

26) What number is 20,000 more than 78? 26) _____

Write each of the following numbers.

27) two hundred sixty-seven 27) _____

28) four thousand seventy-nine 28) _____

29) nineteen thousand three hundred forty 29) _____

30) two hundred ten thousand, twenty-two 30) _____

Period_____ Name_____

Teacher_____ Date_____

Score_____

Matching Exercise:

Select the property which is illustrated in each example. Put the letter of the correct property by the illustration.

a) Commutative of Addition
b) Commutative of Multiplication
c) Associative of Addition
d) Associative of Multiplication
e) Distributive
f) Identity for Addition
g) Identity for Multiplication
h) Closure

_____ 1) $2 + 3 + 7 = 2 + 7 + 3$

_____ 2) $6 \times (4 + 2) = (6 \times 4) + (6 \times 2)$

_____ 3) $3 \times (6 \times 2) = 3 \times (2 \times 6)$

_____ 4) $7 \times (4 \times 3) = (7 \times 4) \times 3$

_____ 5) $6 \times (4 + 0) = 6 \times 4$

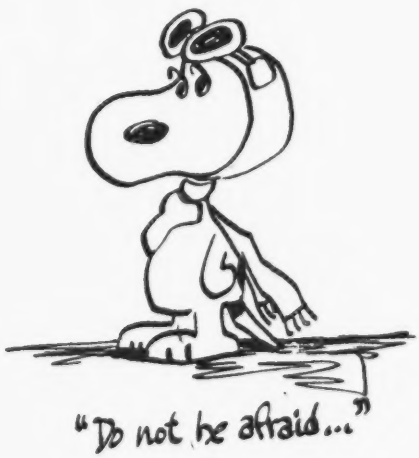
_____ 6) $(3 \times 2) + (5 \times 2) = (3 + 5) \times 2$

_____ 7) $7 + 6 = 13$

_____ 8) $(6 + 3) + (5 + 2) = 6 + (3 + 5) + 2$

_____ 9) $(7 \times 1) + (9 \times 1) = 7 + 9$

_____ 10) $(2 + 4) \times (3 + 5) = (3 + 5) \times (2 + 4)$



Period__ _____ Name_____

Teacher_____ Date_____

Score_____

Matching Exercise:

Match the examples to the property they illustrate by putting the appropriate letter in the blanks.

a) Associative of Addition
b) Commutative of Addition
c) Identity for Addition
d) Closure
e) Associative of Multiplication
f) Commutative of Multiplication
g) Identity for Multiplication
h) Distributive

_____ 1) $(a + b) \times c = (b + a) \times c$

_____ 2) $6 \times (a + d) = (6 \times a) + (6 \times d)$

_____ 3) $3 \times (a + o) = 3 \times a$

_____ 4) $(3 \times s) \times (4 \times a) = 3 \times (2 \times 4) \times a$

_____ 5) $(6 + 3) + (1 + 4) = (6 + 3 + 1) + 4$

_____ 6) If a and b are whole numbers, $a + b = c$, and c is also a whole number.

_____ 7) $(3 + 2) \times a = (3 \times a) + (2 \times a)$

_____ 8) $(3 + 2) \times (4 + 6) = (4 + 6) \times (3 + 2)$

_____ 9) $(2 \times 1) + 6 = 2 + 6$

_____ 10) $(a + b + c) + d = d + (a + c + b)$

Period _____ Name _____

Teacher _____ Date _____

Score _____

Write the first eight numbers in the following bases.

(1) Base 2 _____, _____, _____, _____, _____, _____, _____, _____

(2) Base 3 _____, _____, _____, _____, _____, _____, _____, _____

(3) Base 9 _____, _____, _____, _____, _____, _____, _____, _____

(4) In the number 234_{five} the 2 means _____.

(5) In the number 1032_{four} the 3 means _____.

(6) In the number 1398_{twelve} the 9 means _____.

Change bases as indicated.

(7) 223_{five} = _____ ten.

(8) 1001_{two} = _____ ten.

(9) 431_{seven} = _____ ten.

(10) 47_{ten} = _____ two.

(11) 176_{ten} = _____ four.

(12) 325_{ten} = _____ nine.

(13) 241_{two} = _____ two.

(14) Name the digits used in base 6.

Perform the indicated operations.

(15) $241_{five} + 324_{five}$

(16) $634_{seven} + 53_{seven} + 263_{seven}$

(17) $431_{five} \times 24_{five}$

(18) $1001_{two} \times 101_{two}$

(19) $76_{eight} - 23_{eight}$

(20) $321_{five} - 234_{five}$

Period _____ Name _____

Teacher _____ Date _____

Score _____

(1) Give a number in base three that is indicated by the following picture.

Number _____

(2) Write the first twelve numbers in base four.

(3) The 3 in the number 2314_{five} means _____.

(4) In the number 7631_{eight} the 1 means _____.

(5) The 5 in the number 453_{six} means _____.

(6) Name the digits used in base eight.

(7) Letting t = 10, write a base eleven number for 72.

Change bases as indicated.

(8) 232_{five} = _____ ten

(9) 617_{eight} = _____ ten

(10) 361_{seven} = _____ ten

(11) 1101_{ten} = _____ ten

(12) 74_{ten} = _____ six

(13) 761_{ten} = _____ five

(14) 39_{ten} = _____ two

(15) 432_{five} = _____ four

Period _____ Name _____

Teacher _____ Date _____

Score _____

(1) in 2431_{seven} the 4 means _____.

(2) Write expanded notation for 2316_{seven}.

(3) What digits are used in base seven?

(4) In the number 3402_{five} the 3 means _____.

(5) 431_{five} = _____ ten.

(6) 602_{seven} = _____ ten.

(7) 110101_{two} = _____ ten.

(8) 321_{ten} = _____ three.

(9) 683_{ten} = _____ eight.

(10) 238_{ten} = _____ two.

(11) 344_{five} = _____ seven.

Perform the indicated operations.

(12)
$$\begin{array}{r} 146_{eight} \\ +\ 121_{eight} \\ \hline 111_{eight} \end{array}$$

(13)
$$\begin{array}{r} 11101_{two} \\ +\ 1011_{two} \\ \hline 1101_{two} \end{array}$$

(14)
$$\begin{array}{r} 123_{five} \\ -\ 42_{five} \\ \hline \end{array}$$

(15)
$$\begin{array}{r} 352_{six} \\ \times\ 42_{six} \\ \hline \end{array}$$

(16)
$$\begin{array}{r} 3112_{eight} \\ \times\ 32_{eight} \\ \hline \end{array}$$

(17)
$$\begin{array}{r} 321_{four} \\ -\ 132_{four} \\ \hline \end{array}$$

(18)
$$\begin{array}{r} 113_{five} \\ 233_{five} \\ +\ 431_{five} \\ \hline \end{array}$$

(19)
$$\begin{array}{r} 641_{seven} \\ \times\ 35_{seven} \\ \hline \end{array}$$

(20)
$$\begin{array}{r} 12500_{eight} \\ -\ 7674_{eight} \\ \hline \end{array}$$

Period_____

Teacher_____

Name_____

Date_____

Score_____

Answers:

1) Is 47 closer to 40 or 50? 1) _____

2) Is 187 closer to 100 or 200? 2) _____

3) Is 232 closer to 230 or 240? 3) _____

4) Is 5420 closer to 5400 or 5500? 4) _____

5) Is 78,423 closer to 70,000 or 80,000? 5) _____

Round off each of the following as directed.

6) 1436 to the nearer hundred 6) _____

7) 69,832 to the nearer thousand 7) _____

8) 6,872,746 to the nearer ten-thousand 8) _____

9) 6237 to the nearer ten 9) _____

10) 10,407 to the nearer thousand 10) _____

11) 450,251 to the nearer hundred 11) _____

12) 64,375 to the nearer ten 12) _____

13) 550 to the nearer hundred 13) _____

14) 650 to the nearer hundred 14) _____

15) 62,834 to the nearer thousand 15) _____

Period_____

Teacher_____

Name_____

Date_____

Score_____

	Answers:
1) Is 78 closer to 70 or 80?	1) _____
2) Is 423 closer to 400 or 500?	2) _____
3) Is 7652 closer to 7600 or 7700?	3) _____
4) Is 3422 closer to 3400 or 3500?	4) _____
5) Is 187 closer to 180 or 190?	5) _____

Round off each of the following as directed.

6) 5499 to the nearer thousand	6) _____
7) 5499 to the nearer ten	7) _____
8) 48,082 to the nearer hundred	8) _____
9) 48,082 to the nearer ten-thousand	9) _____
10) 378 to the nearer ten	10) _____
11) 750 to the nearer hundred	11) _____
12) 850 to the nearer hundred	12) _____
13) 6340 to the nearer ten-thousand	13) _____
14) 17,683,214 to the nearer million	14) _____
15) 43,582 to the nearer thousand	15) _____

Period_____ Name_____

Teacher_____ Date_____

Score_____

Answers:

1) Is 46 closer to 40 or 50? 1) _____

2) Is 137 closer to 100 or 200? 2) _____

3) Is 473 closer to 470 or 480? 3) _____

4) Is 26.4 closer to 26 or 27? 4) _____

5) Is 3.421 closer to 3.4 or 3.5? 5) _____

Round each of the following as directed.

6) 69,832 to the nearer thousand 6) _____

7) 10,407 to the nearer ten 7) _____

8) 435.016 to the nearer tenth 8) _____

9) 4502.51 to the nearer one 9) _____

10) 6,832,746 to the nearer ten-thousand 10) _____

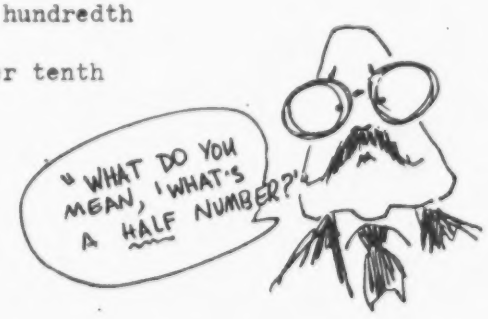
11) 832 to the nearer thousand 11) _____

12) 550 to the nearer hundred 12) _____

13) 650 to the nearer hundred 13) _____

14) .4356 to the nearer hundredth 14) _____

15) 643.752 to the nearer tenth 15) _____



Period_____

Teacher_____

Name_____

Date_____

Score_____

Answers:

1) Is 553 closer to 500 or 600? 1) _____

2) Is 7.431 closer to 7 or 8? 2) _____

3) Is 24.639 closer to 24.6 or 24.7? 3) _____

4) Is 768 closer to 1000 or 0? 4) _____

5) Is 450 closer 59 400 or 500? 5) _____

Round off each of the following as directed

6) 865 to the nearer hundred 6) _____

7) 10,800 to the nearer thousand 7) _____

8) 5.91 to the nearer one 8) _____

9) 6587 to the nearer thousand 9) _____

10) 1075 to the nearer hundred 10) _____

11) 2.473 to the nearer tenth 11) _____

12) 8.0561 to the nearer hundredth 12) _____

13) 8.0561 to the nearer tenth 13) _____

14) .0718 to the nearer thousandth 14) _____

15) 82,795 to the nearer ten-thousand 15) _____

Period_____ Name_____

Teacher_____ Date_____

Score_____

Use = or ≠ to make each statement true.

1) 275 + 476 _____ 476 + 275

2) 48 ÷ 3 _____ 12 + 10

3) 25 + 30 _____ 5 x 11

4) 16 + 8 _____ 32 - 5

5) $\frac{1}{7}$ _____ $\frac{1}{8}$

6) $\frac{3}{5}$ _____ $\frac{6}{10}$

7) 4 x 2 x 3 _____ 3 x 4 x 3

Use <, =, > to make each statement true.

8) 101 _____ 110

9) $\frac{1}{2}$ _____ $\frac{1}{3}$

10) 1.011 _____ 10.1

11) $\frac{7}{4}$ _____ $\frac{16}{8}$

12) 5 + 3 _____ 15 - 7

13) $\frac{5}{8}$ _____ $\frac{9}{16}$

14) $\frac{1}{2}$ + 3 _____ 2 + 2

15) 52 - 3 _____ 7 x 7

Period_____

Teacher_____

Name_____

Date_____

Score_____ + _____

Use = or ≠ to make each statement true.

1) 138 + 143 _____ 142 + 139

2) 24 ÷ 2 _____ 15 - 3

3) 34 + 12 _____ 3 x 16

4) $\frac{1}{3}$ _____ $\frac{1}{4}$

5) 5 x 2 x 3 _____ 3 x 5 x 2

6) (18 + 3) ÷ 3 _____ 49 ÷ 7

Use < , = , > to make each statement true.

7) 120 _____ 102

8) $\frac{2}{3}$ _____ $\frac{4}{6}$

9) 2.141 _____ 21.4

10) $\frac{9}{4}$ _____ $\frac{6}{3}$

11) 7 + 9 _____ 3 x 5

12) $\frac{3}{5}$ _____ $\frac{7}{10}$

13) $\frac{1}{3} + \frac{1}{2} + \frac{1}{4}$ _____ $\frac{1}{4} + \frac{1}{3} + \frac{1}{2}$

14) 48 ÷ 6 _____ 8 x 7

15) 12 + 3 - 2 _____ 72 ÷ (4 x 2)

Period_____ Name_____

Teacher_____ Date_____

Score_____

Perform the indicated operations.

1) $29 + 12 + 48 + 37$

2) $4763 + 268 + 396 + 8476$

3) $2763 - 482$

4) 27×38

5) 406×27

6) $2000 - 892$

7) 709×48

8) 48×26

9) $4723 - 1804$

10) $49\overline{)7265}$

11) $72\overline{)7236}$

12) $37\overline{)415}$

13) $73\overline{)6059}$

14) $78 + 46 + 99 + 45$

15) $8764 + 875 + 2362 + 7407$

16) 976×86

17) $2754 + 98{,}632 + 4789 + 2984 + 27{,}774$

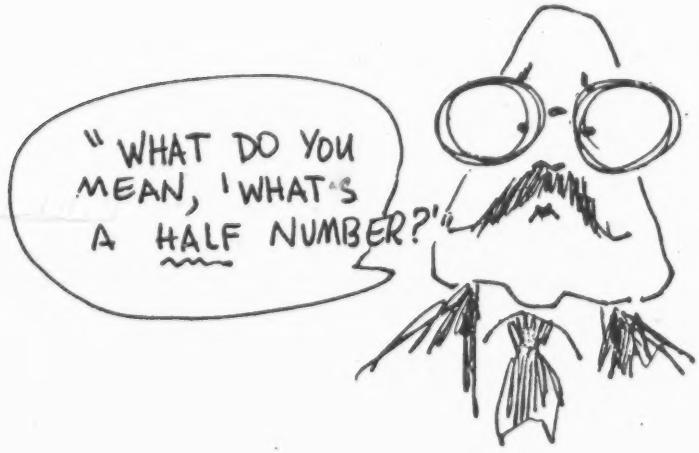
18) $16\overline{)8144}$

19) $27{,}683 - 9842$

20) $34\overline{)7344}$

Answers:

1)_____
2)_____
3)_____
4)_____
5)_____
6)_____
7)_____
8)_____
9)_____
10)_____
11)_____
12)_____
13)_____
14)_____
15)_____
16)_____
17)_____
18)_____
19)_____
20)_____



Period_____ Name_____

Teacher_____ Date_____

Score_____

Perform the indicated operations

1) 265 + 12 + 121

2) 1954 + 89 + 654 + 5412 + 17 + 650

3)
$$\begin{array}{r} 4302 \\ 5349 \\ 876 \\ 2001 \\ +\ 1522 \\ \hline \end{array}$$

4)
$$\begin{array}{r} 724359 \\ +\ 843652 \\ \hline \end{array}$$

5)
$$\begin{array}{r} 467 \\ -\ 83 \\ \hline \end{array}$$

6)
$$\begin{array}{r} 4576 \\ -\ 2809 \\ \hline \end{array}$$

7)
$$\begin{array}{r} 3000 \\ -\ 1765 \\ \hline \end{array}$$

8) 4132 - 782

9) 70001 - 586

10) (768 + 245 + 376) - 843

11) (7843 - 276) + (347 - 263)

12) 470 - (68 + 27)

13) (8607 - 4238) - 2430

14) 7683 - (7111 - 1236)

15)
$$\begin{array}{r} 7206 \\ 1907 \\ 8050 \\ 392 \\ +\ 1706 \\ \hline \end{array}$$

Answers:

1)_____
2)_____
3)_____
4)_____
5)_____
6)_____
7)_____
8)_____
9)_____
10)_____
11)_____
12)_____
13)_____
14)_____
15)_____

Period_____ Name_____

Teacher_____ Date_____

Score_____

Find the following products and quotients.

1) $\begin{array}{r} 99 \\ \times\ 51 \\ \hline \end{array}$

2) $\begin{array}{r} 78 \\ \times\ 901 \\ \hline \end{array}$

3) 630 x 45

4) 98 x 708

5) 8274 x 943

6) (768 + 239 - 483) x 76

7) $21\overline{)4221}$

8) $87\overline{)3654}$

9) 5561 ÷ 64

10) 4150 ÷ 166

11) 78255 ÷ 45

12) 514 x 200

13) (732 x 35) ÷ 105

14) (9920 ÷ 310) x 15

15) (6783 - 2038) ÷ 73

Answers

1)_____
2)_____
3)_____
4)_____
5)_____
6)_____
7)_____
8)_____
9)_____
10)_____
11)_____
12)_____
13)_____
14)_____
15)_____

Period_____ Name_____

Teacher_____ Date_____

Score_____

Perform the operations as indicated

1) $\begin{array}{r} 82 \\ 743 \\ 96 \\ +\ 1427 \\ \hline \end{array}$

2) $\begin{array}{r} 6749 \\ -\ 236 \\ \hline \end{array}$

3) $\begin{array}{r} 843 \\ \times\ 27 \\ \hline \end{array}$

4) $72\overline{)24912}$

5) $\begin{array}{r} 64293 \\ -\ 1499 \\ \hline \end{array}$

6) $37\overline{)2316}$

7) 204×329

8) $43 + 186 + 1092 + 31 + 6$

9) $3500 - 1286$

10) $\begin{array}{r} 2094 \\ 4969 \\ 9687 \\ 7984 \\ +\ 4976 \\ \hline \end{array}$

11) $58032 \div 93$

12) $(4291 \times 37) - 69848$

13) $89999 + 43578 + 62143 + 267 + 1423$

14) $23841 \div 243$

15) $(60002 - 4986) + (73 \times 215)$

Answers:

1)_____

2)_____

3)_____

4)_____

5)_____

6)_____

7)_____

8)_____

9)_____

10)_____

11)_____

12)_____

13)_____

14)_____

15)_____

Period_____ Name_____

Teacher_____ Date_____

Score_____

1) What does the 6 mean in the number 47.062?

_____

2) A common fraction is actually an indication of (addition, subtraction, multiplication, division).

_____

3) To convert $\frac{3}{4}$ to a decimal you _____ _____ by _____.

Write each of the following as decimals.

4) thirty-seven and twenty-three hundredths

_____

5) six and forty-two thousandths

_____

6) seven hundred six thousandths

_____

7) one hundred and two hundred-thousandths

_____

8) three hundred four and one hundred six ten-thousandths

_____

Write each of the following in words.

9) .031 _____

10) 1.36 _____

11) 29.940 _____

12) .243 _____

13) 703.0016 _____

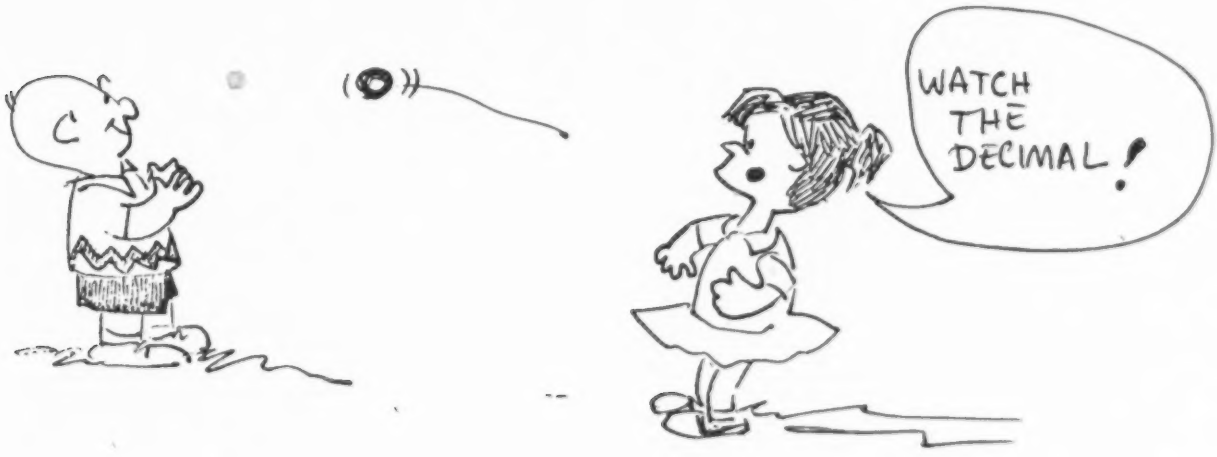
Change the following common fractions to equivalent decimals.

14) $\frac{4}{5}$ _____ 15) $\frac{1}{8}$ _____ 16) $\frac{3}{20}$ _____

Change each decimal to a common fraction in simplest form.

17) .25 _____ 18) .6 _____ 19) 1.3 _____

20) .136 meand $\frac{136}{?}$ _____



Period_____ Name_____

Teacher_____ Date_____

Score_____

1) Give the meaning of each digit in the number 2.364

2 _____

3 _____

6 _____

4 _____

2) A common fraction indicates what operation of arithmetic?

_____

Write each of the following as decimals.

3) seventy-eight and sixty-three thousandths _____

4) six hundred forty-two ten-thousandths _____

5) twenty and seven hundredths _____

6) fifteen and fifty hundredths _____

7) four hundred eighty and three tenths _____

Write each of the following in words.

8) .076 _____

9) 4.25 _____

10) 37.483 _____

11) 10.0863 _____

12) 807.0021 _____

Change the following common fractions to either terminating or repeating decimal fractions.

13) $\frac{3}{4}$ _____ 14) $\frac{5}{6}$ _____ 15) $\frac{3}{8}$ _____ 16) $\frac{4}{3}$ _____

Change the following decimal fractions to common fractions in lowest terms.

17) .875 _____ 18) $.1\overline{6}$ _____ 19) .35 _____ 20) $.\overline{27}$ _____

Period_____ Name_____

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Score_____

1) What does the 4 mean in the number 27.0043? _____

2) A common fraction indicates what operation of arithmetic?

_____

Write each of the following as decimals.

3) two hundred three and four hundredths _____

4) seven and twenty-one hundredths _____

5) seventeen thousandths _____

6) two thousand four and fifty-seven ten-thousandths _____

Write each of the following in words.

7) 2.46 _____

8) .078 _____

9) 243.768 _____

10) 4021.0030 _____

Change the common fractions to decimals.

11) $\frac{3}{5}$ _____ 12) $\frac{3}{8}$ _____

Change each decimal to a common fraction in lowest terms.

13) .35 _____ 14) .8 _____ 15) 2.45 _____

Period_____ Name_____

Teacher _____ Date_____

Score_____ _____

1) In the number 27.3605 give the meaning of each number indicated.

3 _____ 5 _____

Write each of the following in words.

2) 206.043 _____

3) 17.97 _____

4) .0683 _____

5) 170.237 _____

Write each of the following as decimals.

6) forty-eight and seventeen hundredths _____

7) three hundred twenty-nine thousandths _____

8) six and twenty thousandths _____

9) two thousand ten and two hundred ten hundred-thousandths _____

Change each common fraction to a terminating or repeating decimal.

10) $\frac{1}{2}$ _____ 11) $\frac{1}{6}$ _____ 12) $\frac{7}{8}$ _____

Change each decimal to a common fraction in simplest form.

13) $.8\overline{3}$ _____ 14) .625 _____ 15) $.\overline{24}$ _____

Period_____

Teacher_____

Name_____

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Score_____

Multiply each of the following.

1) 20 x 10

2) .3 x 100

3) 3.4 x 10

4) 7.68 x 1000

5) .0052 x 100

6) .036 x 100

Divide each of the following.

7) 340 ÷ 10

8) 73 ÷ 10

9) .86 ÷ 10

10) 23.4 ÷ 100

11) 2480 ÷ 1000

12) 7.068 ÷ 10

Multiply or divide as indicated

13) 7.6 ÷ 10

14) 7.6 x .1

Answers:

1)_____
2)_____
3)_____
4)_____
5)_____
6)_____
7)_____
8)_____
9)_____
10)_____
11)_____
12)_____
13)_____
14)_____
15)_____

15) To multiply by 100 you actually just move the decimal point _____ spaces to the _____. Dividing is just the opposite.

Period_____

Teacher_____

Name_____

Date_____

Score_____

Multiply each of the following.

1) 29 x 100

2) .68 x 10

3) 3.2 x 1000

4) 3.463 x 100

Divide each of the following.

5) 200 ÷ 100

6) 16 ÷ 10

7) .21 ÷ 100

8) 43.8 ÷ 1000

Tell what operation is being described in each of the following.

9) I start with 2.6 and move the decimal three places to the right so I have 2600. as a result.

10) My result is .068 after moving the decimal two places to the left.

Multiply or divide as indicated.

11) 290 ÷ 10

12) 290 x .1

13) 290 ÷ .1

14) 290 x 10

15) 27.63 ÷ .01

Answers:

1)_____

2)_____

3)_____

4)_____

5)_____

6)_____

7)_____

8)_____

9)_____

10)_____

11)_____

12)_____

13)_____

14)_____

15)_____

Period_____ Name_____

Teacher_____ Date_____

Score_____

Perform the indicated operations with decimals

1) $\begin{array}{r} 7.01 \\ 13.2 \\ +\ 9.761 \\ \hline \end{array}$

2) $\begin{array}{r} 1.718 \\ .0029 \\ +\ .48 \\ \hline \end{array}$

3) $\begin{array}{r} 9.06 \\ 351.8 \\ +\ .4675 \\ \hline \end{array}$

4) 7.01 + 61.2 + 178.326 + 14

5) $\begin{array}{r} 7.32 \\ -\ 1.08 \\ \hline \end{array}$

6) $\begin{array}{r} 6.85 \\ -\ 2.1 \\ \hline \end{array}$

7) $\begin{array}{r} 20.27 \\ -\ 8.144 \\ \hline \end{array}$

8) 38 - 4.768

9) 4.01 - .8934

10) $\begin{array}{r} 4.7 \\ \times\ 35 \\ \hline \end{array}$

11) $\begin{array}{r} .72 \\ \times\ 2.8 \\ \hline \end{array}$

12) $\begin{array}{r} 1.79 \\ \times\ .33 \\ \hline \end{array}$

13) .5 x .013

14) .91 x 6.2

15) .214 x .014

16) $7\overline{)57.4}$

17) $3.7\overline{)31.08}$

18) $.005\overline{).6}$

19) 33.64 ÷ 1.16

20) 400 ÷ .2

Answers:

1)_____

2)_____

3)_____

4)_____

5)_____

6)_____

7)_____

8)_____

9)_____

10)_____

11)_____

12)_____

13)_____

14)_____

15)_____

16)_____

17)_____

18)_____

19)_____

20)_____

Period_____ Name_____

Teacher_____ Date_____

Score_____

Add or subtract as indicated.

1) $\begin{array}{r} 6.775 \\ 14.7 \\ + \ 3.64 \\ \hline \end{array}$

2) $\begin{array}{r} 76.142 \\ 3.01 \\ 132.4613 \\ + \ 56.3 \\ \hline \end{array}$

3) $\begin{array}{r} 32.459 \\ 45.968 \\ 87.990 \\ 75.756 \\ \hline \end{array}$

4) 759.3146 + 24.6733 + 8.706 + 95.2008

5) 9.06 + 351.8 + 86.42 + 7.268 + .4675

6) $\begin{array}{r} 5.42 \\ - \ 3.86 \\ \hline \end{array}$

7) $\begin{array}{r} 7.0201 \\ - \ .497 \\ \hline \end{array}$

8) $\begin{array}{r} 8.01 \\ - \ .685 \\ \hline \end{array}$

9) 351.8 - 84.4299

10) .312 - .1504

11) 1 - .86372

12) (27.5 - 21.68) + 17.2

13) (7.821 + 38.3) - 16.52

14) (38 - 4.768) + 3

15) 67.43 - (2.453 + 7.06)

Answers:

1)_____

2)_____

3)_____

4)_____

5)_____

6)_____

7)_____

8)_____

9)_____

10)_____

11)_____

12)_____

13)_____

14)_____

15)_____

Period_____ Name_____

Teacher_____ Date_____

Score_____

Find the following products and quotients.

1) 7.02×9.2

2) $.004 \times .18$

3) 15.02×5.001

4) $1.16\overline{)33.64}$

5) $.12\overline{)10.8}$

6) $.08\overline{)49.6}$

7) 225×8.75

8) 40.3×8.1

9) 5.15×3.2

10) $.35\overline{)71.05}$

11) $.009\overline{)83.16}$

12) $11\overline{)1.32}$

13) $94.4 \div .008$

14) $(142.9 \div .18)(.3)$

15) $\$14.50 \times 62$

Answers:

1)_____

2)_____

3)_____

4)_____

5)_____

6)_____

7)_____

8)_____

9)_____

10)_____

11)_____

12)_____

13)_____

14)_____

15)_____

Period_____

Teacher_____

Name_____

Date_____

Score_____

Perform the indicated operations.

1) 3.67 + 12.55 + 8.19 + 5.67

2) 1.732 + 2.085 + .993 + .036 + 8.186

3) 7.01 + 61.2 + 178.326 + 14

4) 6.85 - 2.1

5) 12.1 - 9.5

6) (20.27 - 8.144) - 3.278

7) (35 - 16.68) + 7

8) .72 x 2.8

9) 240 x .05

10) 7.24 x 21.3

11) .045 x .02

12) 15.64 ÷ 3.4

13) .0832 ÷ .52

14) 1.715 ÷ .035

15) 83.16 ÷ .009

16) (17.426 + 2.38) - 7.3628

17) (5 - 2.38) (6.4)

18) 225 x 8.75

19) (.304 x .15) ÷ .12

20) .2626 ÷ 2.02

Answers:

1)_____

2)_____

3)_____

4)_____

5)_____

6)_____

7)_____

8)_____

9)_____

10)_____

11)_____

12)_____

13)_____

14)_____

15)_____

16)_____

17)_____

18)_____

19)_____

20)_____

Period_____ Name_____

Teacher_____ Date_____

Score_____

ANSWERS:

1) Write a fraction that has a 5 as its numerator. 1)_____

2) Write an improper fraction with a denominator. 2)_____

3) Is $\frac{4}{3}$ greater than 1? 3)_____

4) Is $\frac{1}{2}$ less than $\frac{1}{3}$? 4)_____

5) Is $\frac{7}{0}$ a useable fraction? 5)_____

6) What is $\frac{0}{5}$ equal to? 6)_____

7)_____

8)_____

9)_____

10)_____

11)_____

12)_____

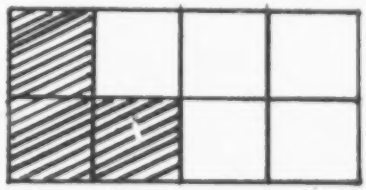
13)_____

14)_____

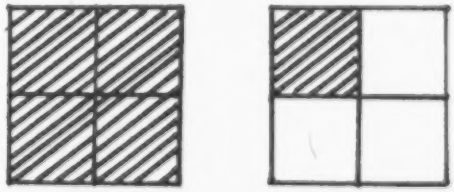
15)_____

Give fractional names for the shaded portions of the following figures.

7)

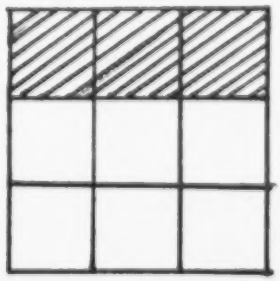


8)

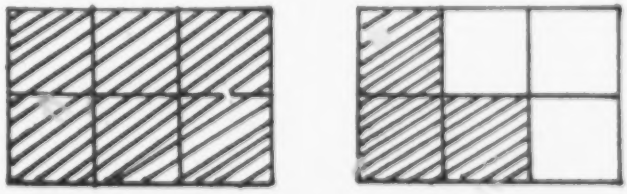


Give two fractional names for the shaded parts of the following figures.

9)



10)



Period _____ Name _____

Teacher _____ Date _____

Score _____

Give the missing fractions in each of the following series.

11) $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$, ___, $\frac{5}{10}$, ___, ___, $\frac{8}{16}$

12) $\frac{1}{3}$, $\frac{2}{6}$, ___, ___, ___, $\frac{6}{18}$

13) ___, $\frac{4}{6}$, $\frac{6}{9}$, ___, ___

14) $\frac{5}{4}$, $1\frac{2}{8}$, ___, $1\frac{8}{32}$, ___, ___

15) Arrange the following fractions in order starting with the smallest value.

$\frac{17}{24}$, $\frac{2}{3}$, $\frac{5}{8}$, $\frac{31}{48}$, $\frac{11}{16}$, $\frac{3}{4}$

ANSWERS

11) _____

_____

_____

12) _____

_____

_____

13) _____

_____

_____

14) _____

_____

_____

15) _____

_____

_____

Period _____ Name _____

Teacher _____ Date _____

Score _____

1) In which pairs do the fractions name the same number?

a) $\frac{2}{3}, \frac{14}{21}$ b) $\frac{20}{25}, \frac{10}{15}$

c) $\frac{7}{8}, \frac{42}{48}$ d) $\frac{15}{10}, \frac{3}{2}$

Express each fraction in higher terms by finding the missing numerators or denominators.

2) $\frac{2}{3} = \frac{\quad}{27}$ 3) $\frac{8}{\quad} = \frac{2}{3}$

4) $\frac{\quad}{32} = \frac{7}{16}$ 5) $\frac{24}{\quad} = \frac{4}{3}$

6) $\frac{3}{8} = \frac{27}{\quad}$ 7) $\frac{7}{12} = \frac{\quad}{48}$

Express in simplest form.

8) $\frac{20}{28}$ 9) $\frac{24}{32}$ 10) $\frac{14}{35}$

11) $2\frac{2}{3}$ 12) $7\frac{1}{2}$ 13) $5\frac{3}{5}$ 14) $3\frac{7}{8}$

Express as whole or mixed numbers. Reduce to lowest terms.

15) $\frac{17}{4}$ 16) $\frac{31}{8}$ 17) $\frac{6}{4}$

18) $\frac{12}{2}$ 19) $\frac{27}{5}$ 20) $\frac{15}{3}$

ANSWERS

1) _____
2) _____
3) _____
4) _____
5) _____
6) _____
7) _____
8) _____
9) _____
10) _____
11) _____
12) _____
13) _____
14) _____
15) _____
16) _____
17) _____
18) _____
19) _____
20) _____

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Score _____

ANSWERS

Supply the missing numerators and denominators.

21) $\frac{10}{16} = \frac{n}{8}$ 21) _____

22) $\frac{5}{6} = \frac{n}{36}$ 22) _____

23) $\frac{24}{n} = \frac{12}{17}$ 23) _____

24) $2\frac{3}{7} = \frac{n}{7}$ 24) _____

25) _____

25) Find the least common denominator for the following set of fractions. Change the fractions to equivalent fractions with the same denominator.

$\frac{7}{12}, \frac{5}{6}, \frac{9}{20}$

Period _____ Name _____

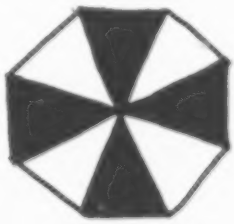
Teacher _____ Date _____

Score _____

1) Give a fraction equivalent to $\frac{2}{3}$ that has 6 as its numerator.

2) Is $\frac{5}{3}$ greater than 2?

3) Give a fraction for the shaded portion of the following figure.



4) Give an improper fraction equivalent to $2\frac{4}{5}$.

Supply the missing parts in the following fractional statements.

5) $\frac{10}{16} = \frac{\quad}{8}$

6) $\frac{12}{17} = \frac{24}{\quad}$

7) $\frac{\quad}{9} = \frac{16}{18}$

8) $\frac{14}{4} = 3\frac{\quad}{2}$

Reduce each of the following to simplest form.

9) $\frac{24}{32}$ 10) $\frac{15}{75}$ 11) $\frac{14}{35}$

Change to mixed fractions in simplest terms or whole numbers.

12) $\frac{17}{4}$ 13) $\frac{31}{8}$ 14) $\frac{18}{12}$

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

Period _____

Teacher _____

Name _____

Date _____

Score _____

Change to improper fractions.

15) $3\frac{4}{5}$ 16) $1\frac{2}{3}$ 17) $7\frac{1}{5}$

Arrange each of the following sets of fractions in order, starting with the smallest value in each case.

18) $\frac{5}{8}, \frac{3}{8}, \frac{3}{4}, \frac{5}{24}, \frac{2}{3}$

19) $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{5}{6}, \frac{7}{12}$

20) Is $\frac{3}{2}$ a proper fraction?

ANSWERS

15) _____

16) _____

17) _____

18) _____

_____

19) _____

_____

20) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

1) If 2^2 means 2 x ' , then 3^2 means _____.

Evaluate the following.

2) 2^2 (3) (13) = _____.

3) 2^3 (3^3) (5^2) = _____.

4) 3 (5^2) (7^2) = _____.

5) 3^3 (7) (11) = _____.

Find a value for 'n' that will make the following true statements. Note that these are "prime factorizations".

6) 3^2 (n) = 99

7) 2 (n) (7) = 42

8) 2 (3) (5) n = 390

9) n^4 (5) = 80

Give prime factorizations for each of the following.

10) 54

11) 200

12) 252

13) 81

14) 70

15) 245

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

Find the G.C.F. (greatest common factor) of each of the following sets of numerals.

1) (20, 36)

2) (63, 84)

3) (42, 70)

4) (21, 15, 27)

5) (16, 24, 40)

6) (30, 105, 225)

7) (65, 20, 52)

8) (32, 138, 80, 112)

Using the greatest common factor, reduce each of the following fractions to simplest form.

9) $\frac{24}{40}$

10) $\frac{70}{84}$

11) $\frac{210}{315}$

12) $\frac{36}{51}$

13) $\frac{84}{112}$

14) $\frac{56}{104}$

15) The greatest common factor of two relatively prime numbers is _____.

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

Find the L.C.M. (least common multiple) of each of the following sets of numbers.

1) (18, 12)

2) (25, 15)

3) (8, 10, 14)

4) (12, 20, 30)

5) (30, 36, 21)

6) (21, 30, 54, 45)

7) (14, 40, 84, 49)

Using the L.C.M., find the lowest common denominator for each of the following sets of fractions.

8) $\left(\frac{7}{20}, \frac{11}{30}\right)$

9) $\left(\frac{7}{30}, \frac{8}{54}\right)$

10) $\left(\frac{9}{22}, \frac{17}{20}\right)$

11) $\left(\frac{7}{8}, \frac{9}{10}, \frac{4}{5}\right)$

12) $\left(\frac{3}{5}, \frac{9}{20}, \frac{15}{16}\right)$

13) $\left(\frac{11}{18}, \frac{5}{12}, \frac{7}{9}, \frac{3}{4}\right)$

14) $\left(\frac{13}{15}, \frac{8}{25}, \frac{2}{5}\right)$

15) $\left(\frac{7}{8}, \frac{7}{48}, \frac{9}{16}, \frac{11}{24}\right)$

ANSWERS

1) _____
2) _____
3) _____
4) _____
5) _____
6) _____
7) _____
8) _____
9) _____
10) _____
11) _____
12) _____
13) _____
14) _____
15) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

Evaluate the following.

1) $(2^2)(7)$ 2) $(2^5)(5^2)$ 3) $(2^2)(3^2)(7)$

Find a value for 'n' to make each of the following true statements.

4) $(3^3)\ n = 135$ 5) $n^3\ (3)\ (5) = 120$

Give the prime factorization for each of the following.

6) 24 7) 81 8) 100 9) 245

Find the G.C.F. for each set of numbers.

10) (20, 36) 11) (16, 24, 40)

12) (20, 32, 48, 56)

Find the L.C.M. for each set of numbers.

13) (18, 12) 14) (25, 15) 15) (5, 20, 16)

16) The G.C.F. of two relatively prime numbers is ____.

Reduce each fraction using G.C.F.

17) $\frac{63}{84}$ 18) $\frac{84}{112}$

Find the least common denominator for each set of fractions using L.C.M.

19) $(\frac{7}{12}, \frac{5}{8}, \frac{9}{16})$ 20) $(\frac{7}{12}, \frac{5}{6}, \frac{9}{20})$

ANSWERS

1) _____
2) _____
3) _____
4) _____
5) _____
6) _____
7) _____
8) _____
9) _____
10) _____
11) _____
12) _____
13) _____
14) _____
15) _____
16) _____
17) _____
18) _____
19) _____
20) _____

Test: 35

Period _____

Teacher _____

Name _____

Date _____

Score _____

1) $7\frac{3}{8} + 8\frac{1}{4} + 5\frac{1}{2}$

2) $19\frac{2}{3} - 12\frac{3}{4}$

3) $16\frac{3}{4} - 7\frac{4}{5}$

4) $\frac{6}{7} \times \frac{2}{3}$

5) $2\frac{2}{3} \times 3$

6) $\frac{2}{3} \times 1\frac{3}{4} \times 2\frac{5}{6}$

7) $3\frac{1}{4} + 2\frac{5}{6} + 3\frac{7}{8}$

8) $4\frac{1}{2} - 1\frac{1}{3}$

9) $5\frac{1}{2} - 2\frac{5}{9}$

10) $(19\frac{1}{12} - 8\frac{1}{3}) - 6\frac{1}{2}$

11) $\frac{8}{9} \div \frac{5}{6}$

12) $\frac{7}{8} \div 2\frac{3}{4}$

13) $2\frac{2}{5} \times 3\frac{1}{4}$

14) $8\frac{4}{5} \div 3\frac{1}{7}$

15) $3\frac{3}{8} \div 6\frac{3}{4}$

16) $2\frac{4}{5} \times 2\frac{1}{2} \times 5\frac{1}{7}$

17) $9\frac{23}{24} - (3\frac{7}{8} - 2\frac{5}{6})$

18) $3\frac{1}{3} \div 2\frac{1}{2}$

19) $2\frac{4}{5} \div (3\frac{1}{2} \times \frac{8}{15})$

20) $(64\frac{1}{2} - 57\frac{3}{4}) \div 2\frac{1}{4}$

ANSWERS

1) _____
2) _____
3) _____
4) _____
5) _____
6) _____
7) _____
8) _____
9) _____
10) _____
11) _____
12) _____
13) _____
14) _____
15) _____
16) _____
17) _____
18) _____
19) _____
20) _____

Period _____.

Teacher _____

Name _____

Date _____

Score _____

Add the following fractions. Reduce to simplest terms.

1) $\begin{array}{r} \frac{3}{5} \\ +\frac{1}{5} \\ \hline \end{array}$

2) $\begin{array}{r} \frac{3}{8} \\ +\frac{3}{8} \\ \hline \end{array}$

3) $\begin{array}{r} \frac{2}{3} \\ \frac{1}{3} \\ +\frac{2}{3} \\ \hline \end{array}$

4) $\begin{array}{r} 3\frac{4}{9} \\ +2\frac{2}{9} \\ \hline \end{array}$

5) $\begin{array}{r} 7\frac{1}{4} \\ +3\frac{1}{4} \\ \hline \end{array}$

Find the common denominators for each group of fractions and change to equivalent fractions with the same denominators.

6) $\frac{2}{3}, \frac{2}{5}$

7) $\frac{1}{4}, \frac{5}{6}, \frac{7}{8}$

8) $\frac{2}{3}, \frac{1}{6}, \frac{1}{2}$

9) $\frac{5}{9}, \frac{5}{6}, \frac{2}{3}$

Add the following fractions. Reduce each answer to lowest terms.

10) $\begin{array}{r} \frac{5}{7} \\ +\frac{9}{14} \\ \hline \end{array}$

11) $\begin{array}{r} 18\frac{3}{4} \\ +9\frac{2}{3} \\ \hline \end{array}$

12) $\begin{array}{r} 9\frac{2}{3} \\ 10\frac{2}{5} \\ +6\frac{1}{6} \\ \hline \end{array}$

13) $\begin{array}{r} 2\frac{3}{16} \\ 5\frac{5}{8} \\ +3\frac{1}{2} \\ \hline \end{array}$

14) $4\frac{2}{5} + \frac{2}{3} + 3$

15) $21\frac{1}{3} + 9\frac{5}{6} + 5\frac{7}{8}$

ANSWERS

1) _____
2) _____
3) _____
4) _____
5) _____
6) _____
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Period _____ Name _____

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ANSWERS

Subtract in each example below.

1) $\frac{4}{5} - \frac{2}{5}$ _____

2) $2\frac{3}{4} - 1\frac{1}{4}$ _____

3) $3\frac{7}{8} - \frac{5}{8}$ _____

4) $\frac{9}{10} - \frac{4}{5}$ _____

5) $\frac{7}{15} - \frac{3}{10}$ _____

6) $7\frac{1}{6} - 2\frac{5}{6}$ _____

7) $8\frac{2}{3} - 2\frac{3}{4}$ _____

8) $7\frac{1}{5} - \frac{3}{10}$ _____

9) $5 - 2\frac{3}{4}$ _____

10) $4 - \frac{7}{8}$

11) $28\frac{5}{12} - 9\frac{2}{3}$

12) $(19\frac{1}{12} - 8\frac{1}{3}) - 6\frac{1}{2}$

13) $9\frac{23}{24} - (3\frac{7}{8} - 2\frac{5}{6})$

14) $(29\frac{3}{5} - 13\frac{1}{2}) + 4\frac{3}{5}$

15) $7\frac{5}{6} - (9\frac{7}{8} - 7\frac{1}{2})$

1) _____
2) _____
3) _____
4) _____
5) _____
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Period _____ Name _____

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ANSWERS

Multiply in each example. Reduce to simplest form.

1) $\frac{7}{10} \times 8$

2) $6 \times \frac{3}{16}$

3) $\frac{2}{3} \times \frac{5}{7}$

4) $\frac{5}{16} \times \frac{1}{2}$

5) $\frac{6}{7} \times \frac{2}{3}$

6) $1\frac{2}{3} \times \frac{3}{5}$

7) $2\frac{1}{2} \times 3\frac{1}{4}$

8) $2\frac{1}{7} \times \frac{4}{5}$

9) $2\frac{2}{5} \times 3\frac{1}{4}$

10) $2\frac{2}{3} \times 4\frac{1}{2}$

11) $4\frac{1}{2} \times 1\frac{2}{3} \times \frac{4}{5}$

12) $1\frac{4}{5} \times 2\frac{1}{3} \times \frac{3}{5}$

13) $3\frac{1}{5} \times 3\frac{3}{4} \times \frac{7}{8}$

14) $1\frac{5}{7} \times 2\frac{2}{6} \times 3\frac{1}{5}$

15) $(3\frac{1}{4} \times 2\frac{1}{2}) \times 3\frac{3}{5}$

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

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11) _____

12) _____

13) _____

14) _____

15) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

ANSWERS

Perform the following divisions. Reduce each to lowest terms.

1) $\frac{5}{8} \div \frac{5}{3}$

2) $3\frac{1}{2} \div \frac{1}{2}$

3) $\frac{8}{9} \div \frac{5}{6}$

4) $2\frac{1}{2} \div 3\frac{1}{3}$

5) $\frac{4}{5} \div 4$

6) $9 \div 3\frac{5}{8}$

7) $5\frac{5}{9} \div 8\frac{1}{3}$

8) $2\frac{5}{8} \div 3$

9) $8\frac{1}{3} \div 1\frac{2}{3}$

10) $3\frac{1}{3} \div 2\frac{1}{2}$

11) $2\frac{4}{5} \div 3\frac{1}{2}$

12) $4\frac{1}{6} \div 8\frac{3}{4}$

13) $8\frac{4}{5} \div 3\frac{1}{7}$

14) $14\frac{2}{3} \div 2\frac{3}{4}$

15) $13\frac{3}{4} \div 6\frac{2}{3}$

1) _____

2) _____

3) _____

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7) _____

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11) _____

12) _____

13) _____

14) _____

15) _____

Test: 40

Period _____

Teacher _____

Name _____

Date _____

Score _____

ANSWERS

Find the following sums and differences. Reduce all answers to lowest terms.

1) $\frac{5}{16} + \frac{3}{4}$

2) $5\frac{3}{7} - 2\frac{5}{9}$

3) $1\frac{1}{12} + 2\frac{7}{8} + 3\frac{3}{4}$

4) $2\frac{3}{8} - 1\frac{2}{3}$

5) $4 - 2\frac{5}{16}$

6) $5\frac{1}{6} - 2\frac{1}{3}$

7) $8\frac{2}{3} - 3\frac{4}{5}$

8) $\frac{7}{8} - \frac{2}{3}$

9) $3\frac{2}{3} + 6\frac{1}{2} + 4\frac{7}{10}$

10) $\left(2\frac{1}{4} + 3\frac{5}{8} + 1\frac{2}{3}\right) - \left(\frac{2}{3} + \frac{3}{4} + \frac{5}{12}\right)$

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

Test: 41

Period _____

Teacher _____

Name _____

Date _____

Score _____

ANSWERS

Find the following products and quotients. Reduce all answers to simplest form.

1) $\frac{3}{5} \times \frac{4}{5}$

2) $20 \times \frac{3}{10}$

3) $\frac{7}{10} \times \frac{2}{3}$

4) $\frac{1}{8} \times 3\frac{3}{4}$

5) $2\frac{2}{3} \times 6\frac{3}{4}$

6) $2\frac{1}{3} \times \frac{3}{7}$

7) $4\frac{1}{5} \times \frac{2}{3}$

8) $4\frac{1}{2} \times 6$

9) $\frac{11}{12} \div \frac{4}{3}$

10) $\frac{3}{2} \div 8$

11) $3\frac{1}{6} \div \frac{1}{6}$

12) $1\frac{5}{9} \div 3\frac{1}{3}$

13) $3\frac{7}{8} \div 2\frac{1}{2}$

14) $\frac{1}{6} \times 5\frac{1}{5} \times 1\frac{7}{10}$

15) $\left(1\frac{4}{5} \times 3\frac{1}{8} \times \frac{2}{3}\right) \div \frac{5}{8}$

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

ANSWERS

Perform the indicated operations. Be sure all answers are in lowest terms.

1) $4\frac{1}{2} + 6\frac{2}{3} + 5\frac{1}{8}$

2) $10\frac{1}{4} - 7\frac{2}{3}$

3) $6\frac{2}{3} + 3\frac{7}{8} + 2\frac{5}{6}$

4) $6\frac{4}{5} \times 8\frac{1}{3}$

5) $17\frac{2}{3} \div 6\frac{1}{2}$

6) $(3\frac{1}{4} \times 2\frac{1}{2}) + 3\frac{3}{5}$

7) $\frac{17}{30} - \frac{5}{12}$

8) $8\frac{4}{5} - 3\frac{2}{3}$

9) $7\frac{1}{2} \div \frac{5}{8}$

10) $\frac{2}{3} \times \frac{4}{5} \times \frac{9}{20}$

11) $21\frac{1}{3} + 9\frac{5}{6} + 5\frac{3}{4}$

12) $2\frac{1}{2} - \frac{2}{3}$

13) $1\frac{7}{8} \times 1\frac{1}{5} \times \frac{2}{3}$

14) $4\frac{3}{10} + 4\frac{3}{4} + 5\frac{2}{5}$

15) $\left[1\frac{11}{14} \times (4\frac{3}{5} \times 2\frac{1}{5})\right] \div 5\frac{3}{7}$

1) _____

2) _____

3) _____

4) _____

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6) _____

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11) _____

12) _____

13) _____

14) _____

15) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

Express each of the following ratios in simplest fractional form.

1) 12 to 18

2) 15 : 5

3) 3 ft. to 24 in.

4) 2 hr. : 1 da.

5) 2.4 : 7.2

6) 15 to 50

7) 6 oz. to 1 lb.

In each proportion below find the missing part.

8) $\frac{4}{10} = \frac{n}{20}$

9) $\frac{16}{4} = \frac{24}{n}$

10) $\frac{3}{n} = \frac{24}{56}$

11) $\frac{1.5}{9} = \frac{2.5}{n}$

12) $\frac{6}{15} = \frac{8}{n}$

13) $\frac{n}{20} = \frac{8}{32}$

14) $\frac{1.4}{n} = \frac{2.1}{2.4}$

15) $\frac{15}{18} = \frac{25}{n}$

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

Express each ratio in simplest fractional form.

1) 25 to 10

2) 36 : 108

3) 24 sec. to 1 min.

4) 2 feet to 1 yard

5) 36 : 24

6) 18 to 6

7) 1 ton to 500 pounds

Find the missing number in each proportion.

8) $\frac{n}{5} = \frac{10}{50}$

9) $\frac{15}{n} = \frac{60}{20}$

10) $\frac{5}{3} = \frac{9}{n}$

11) $\frac{7}{9} = \frac{n}{27}$

12) $\frac{3}{8} = \frac{9}{n}$

13) $\frac{3}{\frac{1}{2}} = \frac{10}{n}$

14) $\frac{24}{n} = \frac{16}{4}$

15) $\frac{7}{\frac{1}{4}} = \frac{n}{2}$

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

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9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

Period _____

Teacher _____

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Date _____

Score _____

Give the form indicated.

1) $\frac{1}{4}$ = _____ %

2) $37\frac{1}{2}$ % = _____ (decimal)

3) 60 % = _____ (fraction)

4) $\frac{1}{8}$ = _____ (decimal)

5) 80 % = _____ (fraction)

6) $\frac{7}{8}$ = _____ %

7) $66\frac{2}{3}$ % = _____ (fraction)

8) $\frac{5}{6}$ = _____ %

9) 75 % = _____ (decimal)

10) $\frac{5}{8}$ = _____ (decimal)

11) 50 % = _____ (fraction)

12) $\frac{1}{10}$ = _____ %

13) 1 = _____ %

14) $\frac{1}{3}$ = _____ %

15) $16\frac{2}{3}$ % = _____ (fraction)

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

Period _____

Teacher _____

Name _____

Date _____

Score _____

Give the form indicated.

1) 25% = ____ (fraction)

2) .375 = ____ (fraction)

3) $\frac{7}{8}$ = ____ %

4) $\frac{3}{5}$ = ____ (decimal)

5) 1 = ____ %

6) $\frac{5}{6}$ = ____ (decimal)

7) .16 $\frac{2}{3}$ = ____ (fraction)

8) 10 % = ____ (fraction)

9) $\frac{2}{3}$ = ____ (decimal)

10) $\frac{5}{8}$ = ____ %

11) 12 $\frac{1}{2}$ % = ____ (fraction)

12) 33 $\frac{1}{3}$ % = ____ (fraction)

13) $\frac{1}{2}$ = ____ %

14) 80 % = ____ (fraction)

15) $\frac{3}{4}$ = ____ %

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

Period _____

Teacher _____

Name _____

Date _____

Score _____

Find the value which makes each statement true.

1) _____ is 30 % of 65.

2) 1 % of 250 is _____.

3) 75 % of 340 = _____.

4) _____ is 9 % of 250.

5) $37\frac{1}{2}$ % of 104 is _____.

6) _____ is 25 % of 48.

7) $16\frac{2}{3}$ % of 6000 is _____.

8) _____ = 75 % of 700.

9) $83\frac{1}{3}$ % of 84 = ____

10) $6\frac{1}{4}$ % of 800 is _____.

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

Period _____

Teacher _____

Name _____

Date _____

Score _____

Find the missing percent in each example.

1) 12 is _____ % of 24.

2) _____ % of 16 is 10.

3) _____ % of 18 = 3.

4) 72 is _____ % of 720.

5) _____ % of 60 is 15.

6) 20 is _____ % of 32.

7) 18 - _____ % of 72.

8) 92 is _____ % of 1840.

9) _____ % of 70 is 21.

10) _____ % of 40 is 60.

ANSWERS

1) _____

2) _____

3) _____

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8) _____

9) _____

10) _____

Test: 49

Period _____

Teacher _____

Name _____

Date _____

Score _____

Find the value to make each statement true.

1) 25 % of _____ is 18.

2) 49 is 87 $\frac{1}{2}$ % of _____.

3) 8 % of _____ is 4.

4) 18 is 75 % of _____.

5) 50 % of _____ is 36.

6) 3 % of _____ is 36.

7) 30 is 40 % of _____.

8) 2 = 1 % of _____.

9) 72 is 80 % of _____.

10) 16 $\frac{2}{3}$ % of _____ is 7.

ANSWERS

1) _____

2) _____, _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

Period _____

Teacher _____

Name _____

Date _____

Score _____

Find the value to make each statement true.

1) 21 is what percent of 35?

2) 15 is 25% of what number?

3) What number is 2 % of 112?

4) 16 is what percent of 40?

5) What number is 195 % of 28?

6) 8 is $33\frac{1}{3}$ % of what number?

7) What number is $16\frac{2}{3}$ % of 516?

8) 16 is what percent of 10?

9) What number is 15 % of 170?

10) 45 is 150 % of what number?

11) $2\frac{1}{2}$ is _____ % of 15.

12) 5 is $\frac{1}{2}$ % of _____.

13) 18 is _____ % of 20?

14) _____ is 4.2 % of 17.

15) _____ is 120 % of 960.

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

Period _____

Teacher _____

Name _____

Date _____

Score _____

Find the number to make each statement true.

1) 10 is _____ % of 50.

2) 12 % of 24 is _____.

3) _____ % of 60 is 15.

4) 12 is _____ % of 24.

5) _____ is $33\frac{1}{3}$ % of 24.

6) 56 % of 552 is _____.

7) 6 is _____ % of 24.

8) $83\frac{1}{3}$ % of 36 is _____.

9) 18 is 75 %of _____.

10) 92 is _____ % of 1840.

11) _____ is $\frac{1}{4}$ % of 2500.

12) 45 is 150 % of _____.

13) 2.5 is 25% of _____.

14) 21 is _____ % of 35.

15) 16 is _____ % of 10.

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

Solve each problem using percent. Show your work.

1) Jim wants to buy a camera that costs $40. He has saved $25 already. What percent of the price of the camera does he already have?

2) Sam was practicing shooting basketball goals. He shot six baskets in 10 tries. What percent of his shots were successful?

3) Linda helped her teacher by correcting papers. One day after school she corrected 75% of the 36 papers the teacher had collected. How many papers did Linda correct?

4) When Bill started playing basketball, he weighed 100 pounds. Now he weighs only 95 pounds. Find the percent of decrease in weight.

5) Mr. Gregory owned 750 acres. He sold $16\frac{2}{3}$ % of it. How many acres does he have left?

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

ANSWERS

6) A shipment of 1900 pounds of milk contains $4\frac{1}{2}$ % butterfat. How many pounds of butterfat are there in this shipment?

6) _____

7) Betty saved 15 % of her allowance last year. She saved a total of $22.50. How much was her total allowance last year?

7) _____

8) A news report states that 3,640 families, or 70% of the families, in the city of Redbluff own their homes. How many families live in Redbluff?

8) _____

9) Mr. Bush calculated that 40% of the radiator coolant in his car was antifreeze. The radiator held 15 quarts. How many quarts of antifreeze were used to fill the radiator?

9) _____

10) There are 387 girls in Hilltop Middle School. This represents 45% of the enrollment. How many students attend this school?

10) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

Solve each problem below. Show your work.

1) Mr. James paid a sales tax of 5% on a purchase amounting to $125. How much did he pay in sales tax?

2) The Bryants saved $700 of their $8400 annual income. What percent of their income did the Bryants save?

3) One year the Browns saved $360. This was 6% of their family income for the year. How much was the family income for the entire year?

4) In a class of 32 pupils, 28 were present one day. What percent of the pupils were present?

5) A storekeeper priced a radio set at 125% of the price he paid for it. He paid $84 for the set. What price did he plan to charge for the set?

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

Period_____ Name _____

Teacher _____ Date _____

Score _____

ANSWERS

6) In a school with an enrollment of 1400 pupils. 7% were absent one day. How many pupils were present?

6) _____

7) _____

7) In a junior high school with 650 pupils enrolled, 52% of the pupils were girls. How many girls were enrolled in the school?

8) _____

9) _____

10) _____

8) A basketball team won 60% of the 40 games it played. How many games did the team lose?

9) Mr. Johnson paid $4060 for a lot. He built a $ 14,500 house on it. The price of the lot was what percent of the cost of the house?

10) A ball player made 70 hits in 200 times at bat. In what percent of his times at bat did he get a hit?

Period _____ Name _____

Teacher _____ Date _____

Score _____

ANSWERS

Solve each of the following problems. Show your work.

1) Paula sold 180 boxes of greeting cards for 75¢ a box. Her rate of commission was 20 %. How much commission did she receive?

1) _____

2) When the department store held a sale, a $ 30 coat was reduced 25 %. What was the sale price of the coat?

2) _____

3) Brian has $ 8.00. Betty has 25% more than Brian. How much does Betty have?

3) _____

4) Mrs. Baker bought sheets at a "25 % Off" sale. She saved $ 4.50. What was the regular price of the sheets Mrs. Baker bought?

4) _____

5) The price of eggs was increased from $ 12.00 to $ 14.40 a case. The increase was what percent of the original price?

5) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

ANSWERS

6) Mr. Briggs has 790 bushels of apples. This is 58 % more than the previous year. How many bushels of apples did he have last year?

6) _____

7) _____

8) _____

7) Mary Smith bought a watch which sells for $ 45. She was charged 10 % federal tax and 4 % sales tax. How much did she have to pay altogether?

9) _____

10) _____

8) A grocery salesman receives 15 % commission on all his sales. What must his monthly sales be to assure him of $ 600 commission for the month?

9) Susan deposited $ 50 in a savings bank which pays interest at a rate of 3 ½ %. How much interest does her deposit earn in 1 year?

10) A salesman earned $ 1,110 for selling a house for $ 18,500. What was his rate of commission?

Period _____ Name _____

Teacher _____ Date _____

Score _____

Give the opposite of each of the following.

1) 7 2) - 5 3) - (- 4) 4) - 15

Find a value to make each statement true.

5) 54 + 17 = n

6) n = 121 - 59

7) n = 17 - 43

8) 56 x 12 = n

9) 32 x -5 = n

10) 42 ÷ -7 = n

11) -56 + -14 = n

12) n = 28 − -15

13) -4 x 22 = n

14) -8 x -35 = n

15) n = -84 ÷ -12

Solve for n.

16) -12 + 32 + -15 = n

17) 26 − (3 x -31) = n

18) n = -7 (5 + -8)

19) (24 ÷ -6) + 54 = n

20) n = -32 — - 56

21) (5 x -4) — (21 x -6) = n

22) -3 (-42 + 65) = n

23) n = 5 (-15 + -10)

24) $\left[(24 \div -6) + -3 \right] \times -3 = n$

25) 4 (-3 + 2) — -7 = n

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

16) _____

17) _____

18) _____

19) _____

20) _____

21) _____

22) _____

23) _____

24) _____

25) _____

Period _____

Teacher _____

Name _____

Date _____

Score _____

Find a value to make each statement true.

1) $-12 \; - \; 8 = n$

2) $n = -25 - \; -3$

3) $-3 \times 6 = n$

4) $3 \times n = -48$

5) $n = -19 \times -4$

6) $n = 0 \; (\; -2 \;)$

7) $n = 84 \div \; -4$

8) $-117 \div -1 = n$

9) $n + -7 = 2$

10) $18 + -10 = n$

Solve for n.

11) $-32 + 17 + -8 = n$

12) $-5 \; (\; 17 + -20 \;) = n$

13) $n = (\; -8 \times -3 \;) + (\; 21 + -6 \;)$

14) $n = (\; -42 \div 6) + 39$

15) $(\; -7 \; \; -15 \;) - -8 = n$

16) $-13 + (\; 21 \times -1 \;) - (\; -15 \div 3 \;) = n$

17) $\frac{-125}{-5} + -3 = n$

18) $-7 \; (\; 5 + -8 \;) = n$

19) $n = 26 - (\; 3 \times -31 \;)$

20) $n = (\; 87 + -32 \;) - -14$

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

16) _____

17) _____

18) _____

19) _____

20) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

Give simple exponent form of each of the following.

1) $x^4 \cdot x^2 =$ _____

2) $\dfrac{5^5 \cdot 5^3 \cdot 5^4}{5 \cdot 5^7} =$ ___

3) $\dfrac{2 \cdot 3^4 \cdot 2^5}{3^2 \cdot 2^4} =$ ___

4) $3^4 \cdot 3^5 \cdot 7^2 =$ _____

5) $\dfrac{a^x \cdot a^y}{a^z}, \quad a \neq 0 \quad =$ _____

Without using negative exponents, give the simplest fractional phrase for each of the following.

6) $4^{-5} \cdot 3^5 \cdot 4^{-2} \cdot 3^{-3} =$ ___

7) $\{ 3^5 \cdot x^{-5} \cdot y^{-10} \} \{ 3^7 \cdot x^{-2} \cdot y^8 \cdot z^3 \}$

8) $6^4 \cdot 5^{-3} \cdot 5^2 =$ _____

9) $\dfrac{x^4 \cdot y^2 \cdot z}{x^{-1} \cdot y^2 \cdot z^3} =$ _____

10) $(3^{-7} \cdot y^2) \cdot (3^9 \cdot y^{-1}) \cdot (3^{-4} \cdot y^{-3}) =$ ___

ANSWERS

1) _____

2) _____

3) _____

4) _____

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7) _____

8) _____

9) _____

10) _____

Test : 58

Period _____ Name _____

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Score _____

ANSWERS

Write simplest exponential notation for each of the following.

11) $(3^{-2})^2 \cdot (3^5)^3 \cdot (2^{-4})^{-5} =$ _____ 11) _____

12) $\dfrac{(10^2)^3 \cdot (10^4)^3}{(10^5)^2} =$ _____ 12) _____

13) $\dfrac{(x^3)^2 \cdot (y^5)^2 \cdot x^8}{(a^3)^5 \cdot y^4}$, assume $a \neq 0, y \neq 0 =$ _____ 13) _____

14) $\dfrac{(7^4)^3 \cdot (x^{-2})^{-4}}{(x^4)^2} =$ _____ 14) _____

15) $\dfrac{(3^4)^5 \cdot (2^4)^4 \cdot (5^2)^3}{(5^3)^2 \cdot (2^4)^5 \cdot (3^5)^4} =$ _____ 15) _____

Period _____ Name _____

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ANSWERS

Write simplest exponent notation for each of the following.

1) $y^3 \cdot y^2 \cdot y =$ _____

2) $\dfrac{x^5 \cdot x^2}{x^4} =$ _____

3) $3^4 \cdot 5^2 \cdot 3^{-7} \cdot 5^1 =$ _____

4) $\dfrac{5^2 \cdot a^5}{5^7 \cdot a^2} =$ _____

5) $\dfrac{3^2 \cdot 2^5 \cdot a^4 \cdot b \cdot 3^0}{2^6 \cdot b^3 \cdot a^0} =$ _____

Write each of the following in simplest fractional form without using negative exponents.

6) $5^{-3} \cdot a^5 \cdot b^{-2} =$ _____

7) $(4^5 \cdot x^3) \cdot (4^{-2} \cdot x^{-5}) =$ _____

8) $3^{-2} \cdot 5^{-6} \cdot s^{-4} \cdot 6^{-1} =$ _____

9) $(7^5 \cdot x^3 \cdot y^6) \cdot (7^{-5} \cdot x^{-2} \cdot y^{-10}) =$ _____

10) $\dfrac{x^4 \cdot y^{-2} \cdot 5}{x^{-1} \cdot y^2 \cdot z^{-3}} =$ _____

1) _____

2) _____

3) _____

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7) _____

8) _____

9) _____

10) _____

Test: 59

Period _____ Name _____

Teacher _____ Date _____

Score _____

ANSWERS

Write simplest exponential notation for each of the following.

11) $(10^3)^5 \cdot (10^2)^3 \cdot 10^5 =$ _____ 11) _____

12) $(3^{-2})^0 \cdot (4^2)^{-3} \cdot (5^0)^{-5} =$ _____ 12) _____

13) $\dfrac{(3^4)^5 \cdot (2^4)^4 \cdot (5^2)^3}{(5^3)^2 \cdot (2^4)^5 \cdot (3^5)^4} =$ _____ 13) _____

14) $\dfrac{(a^5)^6 \cdot (b^4)^2 \cdot a^7 \cdot b^9}{(a^5)^8 \cdot (b^5)^2} =$ _____ 14) _____

assume $a \neq 0$, $b \neq 0$.

15) $(a^3)^{-2} \cdot (b^{-3})^{-6} \cdot (a^{-6})^{-3} \cdot (b^3)^{-7} =$ _____. 15) _____

assume $a \neq 0$, $b \neq 0$.

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Write each of the following in decimal form.

1) 3.7×10^{-6} = _____ 2) 10^{8} = _____

3) 6.042×10^{7} = _____ 4) 2.1×10^{-9} = _____

Write each number below in scientific notation.

5) 100,000,000 = _____ 6) .000086 = _____

7) 92,000,000 = _____ 8) 1,800,000 = _____

9) .0000056 = _____ 10) .00000001 = _____

Find the following products and quotients. Give answers in scientific notation.

11) $800{,}000 \div 2000$

12) $83{,}000 \times .000005 \times 9{,}000{,}000$

13) $(39{,}000 \div 0.003) \times 4000$

14) $\dfrac{(.00000032)(780{,}000)}{(39{,}000)(16{,}000)}$

15) $\dfrac{(35{,}000)(250{,}000)(.00021)}{(.0007)(5000)(.00003)}$

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

Period _____ Name _____

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Write each of the following in scientific notation.

1) .0456 = _____ 2) 38,500,000 = _____

3) 9,000,000 = _____ 4) .000000024 = _____

Write each of the following in decimal form.

5) 1.468×10^{-7} = _____ 6) 3.21×10^{5} = _____

7) 5×10^{-6} = _____ 8) 1.8×10^{3} = _____

Write each product or quotient in scientific notation.

9) (.005) (.0008)

10) 1,600,000 $\div$ .00000008

11) (55,000,000,000) (.0000009) (10^{7})

12) .0000165 $\div$ .000015

Simplify. Give answers in scientific notation.

13) (4.8×10^{6}) $\div$ (6×10^{2})

14) $\dfrac{0.00086 \times 22{,}000}{0.002}$

15) $\dfrac{2400 \times .00035 \times 170{,}000}{0.000014 \times 600{,}000}$

ANSWERS

1) _____

2) _____

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7) _____

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9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

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Score _____

Solve each of the following equations. Show all steps.

1) $67 = a + 28$

2) $t + \frac{3}{4} = 4$

3) $6.5 = .48 + n$

4) $-5 = r - 5$

5) $-9 = r + 10$

6) $15 - n = 3$

7) $d - \frac{7}{8} = \frac{5}{4}$

8) $7 = s + .4$

9) $3 + y = 1$

10) $y - 1 = -9$

ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

Period _____

Teacher _____

Name _____

Date _____

Score _____

Solve each of the following equations. Show all steps.

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ANSWERS

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

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Teacher _____ Date _____

Score _____

ANSWERS

Solve each of the following equations. Show all steps.

1) $5a = 45$

2) $\frac{7}{8}n = 42$

3) $\frac{x}{3} = 9$

4) $-5 = \frac{z}{7}$

5) $-20a = -5$

6) $.06p = 240$

7) $\frac{n}{16} = 16$

8) $1 = \frac{s}{-9}$

9) $2\frac{1}{4}n = 13\frac{1}{2}$

10) $\frac{1}{2}a = 17$

1) _____

2) _____

3) _____

4) _____

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6) _____

7) _____

8) _____

9) _____

10) _____

Period _____ Name _____

Teacher _____ Date _____

Score _____

ANSWERS

Solve each of the following equations. Show all steps.

1) $c - 42 = 59$

2) $3n = -24$

3) $52 = y + 31$

4) $\frac{p}{10} = 5.7$

5) $30.5 = -5y$

6) $n - 1.6 = 3.4$

7) $\frac{y}{-1.7} = 8$

8) $5\frac{1}{3} = 2\frac{1}{2} + n$

9) $\frac{1}{3}x = 21$

10) $7 - s = 9$

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

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Date _____

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ANSWERS

Solve each equation below. Show all steps.

1) $2c + 18 = 46$

2) $7y - y = -18$

3) $\frac{5}{9}b - 13 = 27$

4) $0 = 10n - 30$

5) $9x + 3x = 84$

6) $2 - 3b = 8$

7) $1.8c + 32 = 50$

8) $n - .35n = 195$

9) $-84 = 5a + 9a$

10) $4y - 6y = -28$

1) _____

2) _____

3) _____

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6) _____

7) _____

8) _____

9) _____

10) _____

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Score _____

ANSWERS

Solve each equation. Show steps for solution.

1) $2w + 1 = -5$

2) $-a + 4 = -12$

3) $12h - 14 = 34$

4) $\frac{2a}{3} + 2 = 11$

5) $\frac{2a}{3} - 1 = 7$

6) $\frac{-3}{4}c - 8 = 3$

7) $\frac{1}{2}h + \frac{2}{5} = \frac{4}{5}$

8) $\frac{-7k}{2} + \frac{3}{4} = \frac{5}{8}$

9) $\frac{2n - 12}{3} = -8$

10) $2k - 5 = 17 - 4k$

1) _____

2) _____

3) _____

4) _____

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7) _____

8) _____

9) _____

10) _____

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Teacher _____ Date _____

Score _____

ANSWERS

Solve each equation. Show steps for solution.

1) $3x + 7 = 11$

2) $\frac{x + 6}{2} = 8$

3) $-x + 4 = 9$

4) $\frac{-2n}{7} = -6$

5) $\frac{5}{9}y - 13 = 27$

6) $.6 \times -7 = 9 + .4x$

7) $7n - 7 + 2n = 4n - 10 - n$

8) $6 - 8y = 12 + y$

9) $5c - 2c + 3 = 14c - 1$

10) $5(2x - 8) = 4(3x - 7)$

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

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ANSWERS

Solve each inequality below. Show your work.

1) $a + 6 > 6$

2) $h - 3 < -5$

3) $9y > -72$

4) $\frac{w}{7} < 5$

5) $20x \geq -15$

6) $\frac{r}{4} \geq -6$

7) $x - 9 \leq 9$

8) $-16r < 96$

9) $\frac{b}{-7} > -8$

10) $b - 5 < -9$

1) _____

2) _____

3) _____

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5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

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ANSWERS

Solve each inequality below. Show your work.

1) $\frac{p}{15} < -1$

2) $r - 4 \leq 10$

3) $3x + 2x > 15$

4) $12s < -96$

5) $9t + 6 < -57$

6) $\frac{b}{-6} > -2$

7) $-\frac{2}{3}y \leq -60$

8) $-85 < 6t - 11t$

9) $5a - 3 > -28$

10) $7a - 15a < 144$

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

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Score _____

ANSWERS

Solve each of the following problems. Show equations and steps for solving.

1) The length of a rectangle is 4 inches more than its width. Its perimeter is 44 inches. Find the dimensions of the rectangle.

1) _____

2) _____

3) _____

2) A pair of shoes and a pair of socks together cost $10. The shoes cost $8.50 more than the socks. Find the cost of each.

4) _____

5) _____

3) One number is represented by 'y'. Three less than five times that number is another number. The sum of the two numbers is 21. What are the two numbers?

4) Frank has a board 21 inches long. He wishes to cut from it 4 pieces of equal length and a fifth piece 6 inches longer than the others. How long should each of the five pieces be?

5) Find three consecutive odd numbers such that their sum is 27.

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ANSWERS

6) A collection of dimes and nickels is worth 80 cents. There are twice as many nickels as dimes. Find the number of dimes.

6) _____

7) Separate 95 into two parts so that one part will be 20 less than the other part. What are the two parts?

7) _____

8) A square and a rectangle have equal perimeters. The dimensions of the rectangle are 15 inches and 9 inches. How long is a side of the square?

8) _____

9) Sam is twice as old as Henry. Four years ago the sum of their ages was 25 years. How old is each boy now?

9) _____

10) The measure of the length of the top of a rectangular table is 3 times as long as it is wide. If its length were decreased by 2 feet, and its width increased by 2 feet, it would have the shape of a square. What are the dimensions of the table top?

10) _____

Concept	TEST NUMBERS AND COVERAGE				
NUMBER SYSTEMS	1/ Pre-test Grouping & Base Ten Place Value	2/ Post-test Grouping & Base Ten Place Value	3/ Pre-test Basic Properties	4/ Post-test Basic Properties	5/ Pre-test Grouping & Other Bases Without Operations
	6/ Pre-test Grouping & Other Bases With +, -, x	7/ Post-test Grouping & Other Bases Without Operations	8/ Post-test Grouping & Other Bases With +,-,x	9/ Pre-test Rounding Nos. Whole Nos. Only	10/ Post-test Rounding Nos. Whole Nos. Only
	11/ Pre-test Rounding Nos Including Decimals	12/ Post-test Rounding Nos Including Decimals	13/ Pre-test Inequalities	14/ Post-test Inequalities	
WHOLE NUMBERS	15/ Pre-test Whole Numbers Operations	16/ Post-test Add & Subt. Whole Numbers	17/ Post-test Mult. & Div. Whole Numbers	18/ Post-test Whole Number Operations	
DECIMAL FRACTIONS	19/ Pre-test Theory and Conversion of Decimals w/o Repeating Dec.	20/ Pre-test Theory and Conversion of Decimals With Repeating Dec.	21/ Post-test Theory and Conversion of Decimals w/o Repeating Dec.	22/ Post-test Theory and Conversion of Decimals With Repeating Dec.	23/ Pre-test Multiplying & Dividing by 10,100, etc.
	24/ Post-test Multiplying & Dividing by 10, 100, etc.	25/ Pre-test Decimal Fraction Operations	26/ Post-test Adding and Subtracting Decimals	27/ Post-test Multiplying & Dividing Decimals	28/ Post-Test Decimal Fraction Operations
COMMON FRACTIONS	29/ Pre-test Common Frac. Theory	30/ Pre-test Fractional Conversions	31/ Post-test Theory and Conversion of Fractions	32/ Pre-test Factors and Primes	33/ Pre-test G.C.F. and Reducing Fractions
	34/ Pre-test L.C.M. and Least Common Denominators	35/ Post-test Prime Factors G.C.F. and L.C.M.	36/ Pre-test Fraction Operations	37/ Post-test Adding Fractions	38/ Post-test Subtracting Fractions
	39/ Post-test Multiplying Fractions	40/ Post-test Dividing Fractions	41/ Post-test Adding & Subtracting Decimals	42/ Post-test Multiplying & Dividing Fractions	43/ Post-test Fraction Operations

Concept	TEST NUMBERS AND COVERAGE				
PERCENT	44/ Pre-test Ratio and Proportion	45/ Post-test Ratio and Proportion	46/ Pre-test Percent-Alternate Forms	47/ Post-test Percent-Alternate Forms	48/ Pre-test Percent-Finding Percentage
	49/ Pre-test Percent-Finding the Rate	50/ Pre-test Percent-Finding the Base	51/ Pre-test Mixed Forms of Percent	52/ Post-test Mixed Forms of Percent	53/ Pre-test Basic Percent Problem Solving
	54/ Post-test Basic Percent Problem Solving	55/ Post-test Application of Percents-Problems			
PRE-ALGEBRA TOPICS	56/ Pre-test Signed Numbers	57/ Post-test Signed Numbers	58/ Pre-test Exponents	59/ Post-test Exponents	60/ Pre-test Scientific Notation
	61/ Post-test Scientific Notation	62/ Pre-test Solving Equations-Add. & Subt.	63/ Pre-test Solving Equations Multiplying & Dividing	64/ Post-test Solving Equations Simple-Mixed	65/ Post-test Solving Equations 2-Step Problems
	66/ Pre-test Solving Equations Mixed Forms	67/ Post-test Solving Equations Mixed Forms	68/ Pre-test Solving Inequalities	69/ Post-test Solving Inequalities	70/ Post-test Solving Word Problems-Mixed